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The Journal of the Department of Agriculture of Victoria, Australia.

January, 1926.

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Crop Competitions

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OF

VICTORIA,

AUSTRALIA.

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HON. M. W. J. BOURCHIER, C.M.G., D.S.O., M.L.A.,

Minister for Agriculture.

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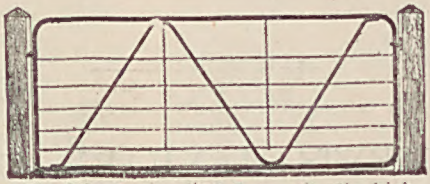

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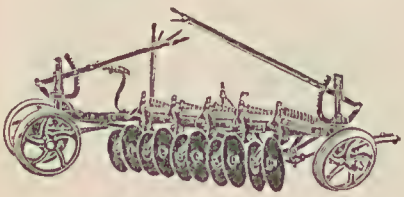

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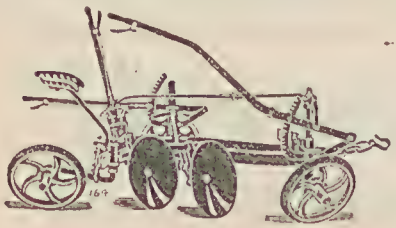

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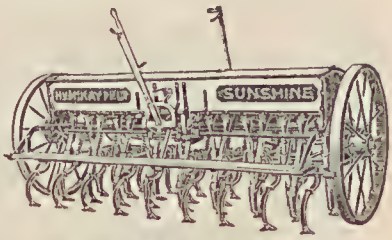

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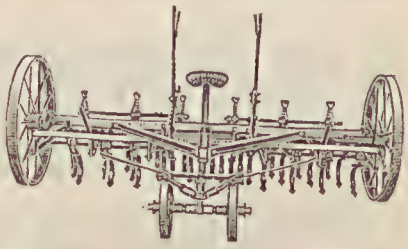

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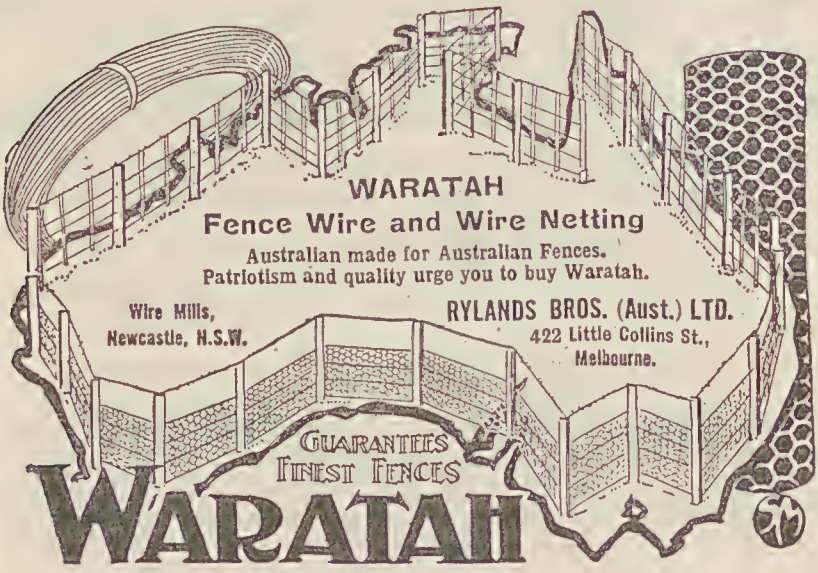

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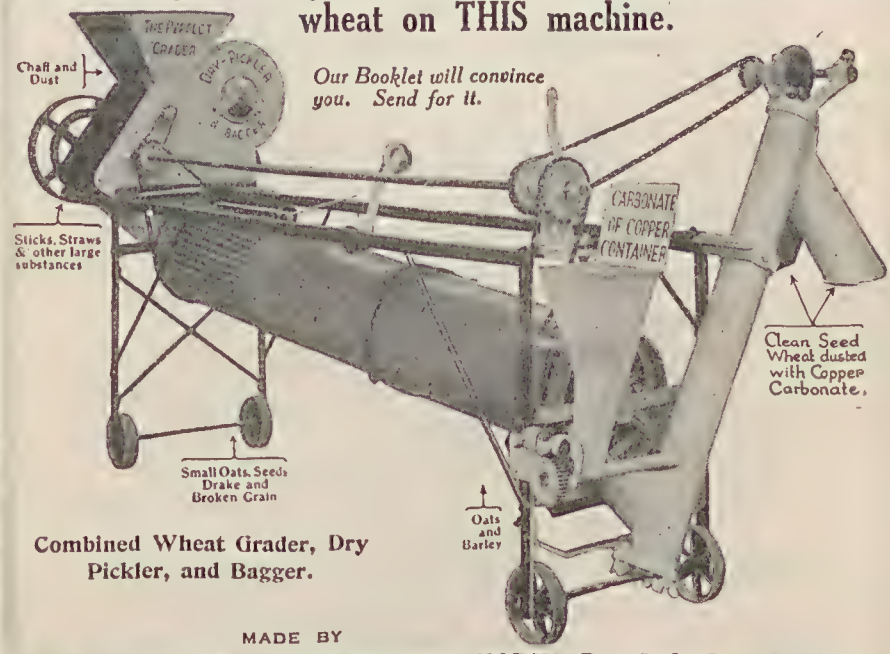
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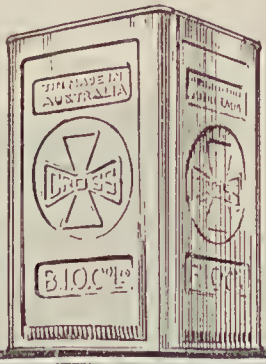

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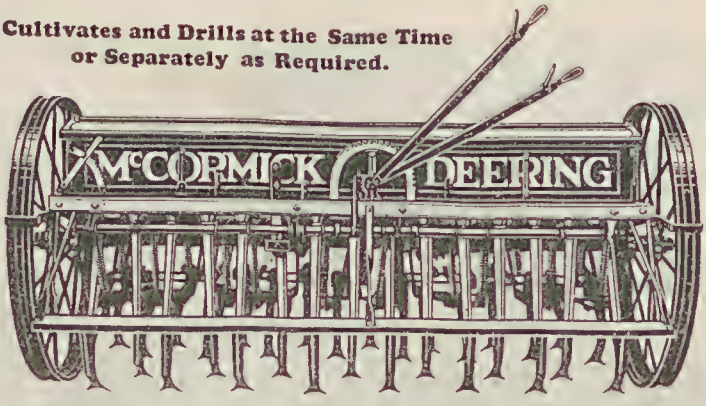

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HEREDITY AND MILKING FUNCTION.

AN ANALYSIS OF THE INHERITANCE OF MILK AND BUTTER-FAT PRODUCTION IN RED POLL CATTLE.

By W. E. Agar, Professor of Zoology, University of Melbourne.

This investigation was undertaken on the suggestion of Dr. S. S. Cameron, Director of Agriculture, who kindly furnished the breeding records and milk and butter-fat production records of the herd of Red Poll cattle under his control at the Victorian State Research Farm, Werribee. Other data and information were kindly supplied by Dr. W. A. N. Robertson, Chief Veterinary Officer of the Department of Agriculture, and the first two volumes of the *Red Poll Herd Book of Australasia* were consulted.

All the tests utilized in the investigation extended for 273 days. Many—indeed most—of the cows were tested for this period in several successive years, and in order to make use of tests carried out on cows of different ages it is necessary to make allowance for the well-known fact that a cow's production both of milk and fat rises with increasing age up to a point, after which it falls slightly. Many ways of allowing for this change of production with age are in use, but it seemed best for the purposes of this investigation to work out the formula anew from the records of the cows actually appearing in these tables. In this calculation the age was taken in whole years as given in the herd book, though doubtless a more accurate formula could have been obtained if fractions of a year had been taken into account.

Table I. gives the average production for 98 cows, varying in age from two to eleven years.

Table I.—Change in Production with Age (Averages for 98 Cows).

Age in Years	2	3	4	5	6	7	8	9	10	11
Butter Fat (lb.)	245	280	326	342	349	335	363	326	304	310
Correction Factor	1·42	1·25	1·07	1·02	1·00	1·04	..	..	..	..
Milk (lb.)	5,633	6,331	7,327	7,634	8,232	7,776	8,198	7,569	7,120	6,899
Correction Factor	1·46	1·30	1·12	1·08	1·00	1·06	1·00	1·09	1·16	1·19
Butter Fat Percentage ..	4·38	4·45	4·47	4·48	4·28	4·32	4·44	4·34	4·32	4·46

The year six, being the year of highest production, is taken as the standard year, and in all the calculations that follow, the yield of butter-fat or milk is given in terms of that age.* That is to say, if a cow was tested each year from three to seven years old, the production of butter-fat when she was three years old was multiplied by 1.25, the fourth year yield by 1.07, and so on; and then the average production calculated from these transmuted values. In this way the average yields of all cows are made comparable, irrespective of age. The figures for total fat after seven years of age proved to be irregular, doubtless owing to the small number of cows tested in later years. Consequently they have not been used in the following calculations.

In reading the rest of this paper it must be constantly borne in mind that all values of milk and butter-fat production are transmuted or "corrected" in this way. If this be not remembered, the figures of milk and fat production mentioned below will appear unduly high.

The percentage of butter-fat ("Test") keeps so nearly constant that it was not necessary to correct for age in regard to this characteristic.

Various attempts have been made to discover Mendelian hereditary factors influencing milk yield, but without much success. This is probably because milk production is a very complex function and is influenced by a very large number of hereditary factors, besides being subject to a great deal of fluctuation due to environmental influences. Mendelian analysis thus becomes impracticable, and there is left to us only the correlation method for discovering how far production is a heritable characteristic.

We can find directly the correlation (which in this case practically means the average measure of resemblance) between mother and daughter for total milk, total butter-fat, and test (butter-fat percentage). Both biologically and statistically the last characteristic is much the most satisfactory to work with, since the test of any cow is much less influenced by external circumstances than is its total production.

We will first, therefore, give the results of the investigation of inheritance of butter-fat percentage, and then turn to the more economically important total production.

* At the Maine Agricultural Experiment Station several breeds have been found to give their greatest yield at eight years of age.

Inheritance of Butter-fat Precentage.

Table II. is the correlation table for 96 pairs of mothers and daughters in respect of butter-fat percentage, the co-efficient of correlation being .332. The coefficient of correlation is a measure of the dependence of daughter's production on mother's production, such that if the daughter's production was absolutely determined by the mother, the correlation would be one; if daughter's production were absolutely independent of mother's production, the correlation would be zero—as a matter of fact it lies about one-third of the way between zero and unity. Clearly then, daughter's production is distinctly influenced, but not absolutely determined, by the mother.

TABLE II.—CORRELATION OF BUTTER-FAT PERCENTAGE OF MOTHERS WITH THAT OF DAUGHTERS.

Mothers.

Daughters. %	3·6	3·8	4·0	4·2	4·4	4·6	4·8	5·0	5·2	5·4	—
3·6	1	1	..	..	..	..	..	..	..	..	2
3·80	..	1	3	4	1	1	1	..	..	..	11
4·00	..	1	5	3	2	2	1	..	..	..	14
4·20	..	2	1	3	6	3	3	1	1	1	21
4·4	..	2	1	3	6	6	1	..	..	1	20
4·6	..	..	2	3	2	2	7	..	..	1	17
4·8	..	..	2	1	2	1	..	..	..	1	7
5·0	..	..	..	..	1	1	..	..	..	1	3
5·2	..	..	..	..	..	..	..	..	..	..	..
5·4	..	..	..	..	1	..	..	..	..	..	1
—	1	7	14	17	21	16	13	1	1	5	96

NOTE.—One mother testing 3.6 (1st column) had one daughter with milk having the same percentage. One mother testing 3.8 (2nd column) had one daughter testing 3.6, one 3.8, one 4.0, two 4.2, two 4.4., and so on.

It is possible to translate this coefficient (.332) into more intelligible figures. The average test for the whole 96 daughters was 4.30, and for the entire group of mothers it was 4.40. The amount by which any individual cow differs from this average is known as its deviation. Thus a cow (mother) with a test of 4.60 has a deviation of +.20.

Now if the variability of the total group of mothers was the same as that of daughters, a correlation coefficient of .332 would mean that daughters on the average inherited .332 of their mother's deviation. But as a matter of fact, the daughters are a slightly less variable group than their mothers, and the true figure is given by $\frac{.332 \times 344}{393} = .291$. (This is known as the coefficient of regression.)

That is to say, daughters *on an average* have .291 times the deviation of their mothers. Thus a mother with a test of 4.80 has a deviation of +.40. Such mothers have daughters with an average deviation +.40×.291=+.12. That is to say, their test is 4.30+.12=4.42. Mothers testing at 4.80 have, therefore, daughters which average out at 4.42. The mothers have transmitted some, but not all, of their superiority to their daughters. Similarly, mothers testing below the average generally have daughters which also test below the average, but not so far below as themselves. It must, of course, be realized that this formula applies only to averages. While it is true that if we take a great number of daughters of cows with a deviation of x points, the *average deviation* for all their daughters will be .291x. Yet the tests of *individual* daughters may vary very widely from this figure.

In regard to butter-fat percentage, then, daughters *on the average* inherit rather less than one-third of their mother's peculiarity, or deviation from the mean.

This knowledge can be used as an aid in evaluating the performance of the bulls. Take, for instance, the two bulls Tabacum and Longford Major. The former has eight tested daughters from tested mothers, six of them giving higher and two of them lower tests than their respective mothers. Longford Major has fifteen such daughters; four of them gave higher and eleven of them gave lower tests than their mothers, so that on the face of it we can conclude that Tabacum transmitted high, and Longford Major low, testing quality. A more accurate estimate of their performance in this respect can, however, be obtained from Tables III. and IV., the meaning of which can be illustrated by the first line in Table III. The left-hand column gives the names of Tabacum's various mates. The first of these (Connecticut) had a test of 4.62, which is .22 above the average of all mothers. The formula given above tells us that the most probable test for the daughter of such a cow would be .22×.291=.064 above the average of all daughters (which is 4.30). We would therefore expect a daughter of Connecticut to test at about 4.30+.06=4.36—or rather, that is the most probable value for Connecticut's daughters, if we disregard the influence of the sire. But the top line of the table shows us that Connecticut's daughter Pipio tested at 4.40—that is to say, .04 above "expectation" (last column). In the table this figure is enclosed in brackets, for a reason to be mentioned below.

If we look down column 6 we find that *in every case* Tabacum's daughters test out above expectation, though in two cases they are below their mother's test.

With Longford Major's daughters there is a different story to tell (Table IV.). Out of the fifteen, two give the same as the expected test, two give a higher and eleven a lower test. The two that give higher

tests are, however, so little higher as to be practically equal to expectation. Indeed, one cannot apply these figures too closely—probably it would not be justifiable to reckon as significant any difference from expectation of less than 20 points, and in the tables all differences of less than 20 points are enclosed in brackets. Applying this criterion, we find that of the eight daughters of Tabacum, three may be considered to give the test expected from the mother's test, and the remaining five give a higher test. Seven of Longford Major's fifteen daughters give practically the expected test, and the remaining eight a lower one.

TABLE III.—OFFSPRING OF TABACUM.

Mate.		Daughter.			
Name.	Test.	Name.	Actual Test.	Expected Test.	Difference of Actual from Expected Test.
Connecticut ..	4·62	Pipio	4·40	4·36	(+·04)
Vuelta	4·18	Tabelta	4·42	4·24	(+·18)
Kentucky	3·97	Tuckahoe	4·75	4·17	+·58
Sumatra	4·35	Samorna	4·76	4·28	+·48
Virginia	4·33	Birdseye	5·46	4·28	+1·18
Bullion	4·30	Goldleaf	4·47	4·27	+·20
Muria	5·42	Regalia	4·62	4·60	(+·02)
Pennsylvania ..	4·12	Sylvia	4·74	4·22	+·52

TABLE IV.—OFFSPRING OF LONGFORD MAJOR.

Mate.		Daughter.			
Name.	Test.	Name.	Actual Test.	Expected Test.	Difference of Actual from Expected Test.
Barbary	3·78	Mellila	3·90	4·12	—·22
Morocco	3·58	Victoria Moora ..	3·63	4·06	—·43
Carribea	4·25	Bahama	4·31	4·26	(+·05)
Aridia	4·51	Aria	4·18	4·33	(—·15)
Pipio	4·40	Hookah	3·86	4·30	—·44
Vuelta	4·18	Majelta	3·93	4·24	—·31
Avesia	4·25	War wings ..	4·23	4·26	(—·03)
Virginia	4·33	Three Castles ..	4·29	4·28	(+·01)
La Belle France ..	4·38	La Marseillaise ..	4·15	4·29	(—·14)
Persica	4·89	Mesopotamia ..	4·21	4·44	—·23
Pennsylvania ..	4·12	Pendant	3·71	4·22	—·51
Flanderina	4·07	Ghenta	3·86	4·20	—·34
Americana	4·50	Tierra del Fuego ..	4·33	4·33	(0)
Velveteen	3·84	Victoria Velour ..	4·14	4·14	(0)
Victoria Red Rosa ..	4·53	Victoria Rose Major	3·94	4·34	—·40

Thus the difference in performance of the two bulls is greater than appears from the crude figures. In every case where Tabacum's daughters differ significantly from the value expected on the basis of

the mother's test, they give a higher value. In every case where Longford Major's daughters differ significantly from the expected value they give a lower one.

The difference between the two bulls is confirmed by the three cases in which they were mated to the same cow—namely, Vuelta, Virginia, and Pennsylvania. In each case Tabacum's daughter tested higher than Longford Major's.

This method of evaluating the performance of bulls is, of course, only suggested as an aid to what in any case must remain an uncertain task. It is not claimed to constitute an infallible test of the daughter-producing power of the bull, as is obvious from the fact that a bull often gets daughters of significantly different tests out of the same cow. But there can be no doubt that a more reliable estimate of the bull's value in this respect can be obtained by allowing in this way for the probable influence of the mother than from the crude figures of daughters' production only.

Inheritance of Total Butter-fat and Milk.

When we come to the inheritance of total butter-fat and milk, we find a correlation coefficient lower than in the case of test; i.e., the productivity of daughters, though sensibly influenced by that of their mothers, is less closely dependent upon it than is butter-fat percentage. This is doubtless because total yield is more subject to environmental influences and is therefore a less accurate indication of the real constitution of the animal.

TABLE V.—MEANS, STANDARD DEVIATIONS, AND CORRELATION COEFFICIENTS.

	Butter Fat.			Milk.			Butter Fat Percentage.		
	M	σ	r	M	σ	r	M	σ	r
	lb.	lb.		lb.	lb.				
Mothers ..	342	55	$\cdot 235 \pm \cdot 060$	8,170	122	$\cdot 093 \pm \cdot 071$	4·40	·39	$\cdot 332 \pm \cdot 061$
Daughters ..	342	69		8,390	178		4·30	·34	

Number of Pairs of Mothers and Daughters: Butter Fat 84. Milk 87. Percentage 96.

As Table V. shows, the correlation between mother and daughter for total butter-fat is .235, while for milk it is only .093. In calculating the figure for fat, I have omitted, as plainly exceptional, one pair; namely, Muria with the very high yield of 536 lb., and her daughter Regalia with the exceedingly low yield of 238 lb. (both figures, as always, transmuted into terms of six-year-old production).

The variability of daughters in the yield of butter-fat is greater than that of mothers, and so, in spite of the lower correlation coefficient, the regression coefficient is higher for fat than for test. Its value is .292; i.e., mothers producing x lb. of butter-fat more (or less) than the average (342 lb.) have daughters averaging .292x lb. above (or below) the average for all daughters (which in this case is the same as for all mothers, namely, 342 lb.).

TABLE VI.—CORRELATION OF TOTAL BUTTER-FAT OF MOTHERS WITH THAT OF DAUGHTERS.

Daughters. \ Mothers.	lb.	225	275	325	375	425	475	—
	175	..	..	2	..	..	..	2
	225	..	1	..	2	..	..	3
	275	1	5	7	4	2	1	20
	325	1	7	4	6	1	..	19
	375	..	4	8	12	2	..	26
	425	..	1	3	2	..	2	8
	475	..	1	1	1	2	..	5
	525	..	..	..	..	1	..	1
	—	2	19	25	27	8	3	85

NOTE.—One mother yielding a total of 225 lb. butter-fat (1st column) produced one daughter yielding 275 lb., and one daughter yielding 325 lb., and so on.

The Part of the Bull.

As before, it is interesting to use this method for evaluating the performance of the bulls. Table VII. gives the results for the four most prolific bulls. The meaning of the table can best be explained by taking an example—e.g., Nicotine's performance in regard to total butter-fat.

TABLE VII.—INFLUENCE OF SIRES ON DAUGHTER'S PRODUCTION.

Sire.	Total Butter Fat.					Total Milk.					Test — Butter Fat Percentage.				
	Number of Daughters.				Mean Difference of Daughters from Expectation (lb.).	Number of Daughters.				Mean Difference of Daughters from Expectation (lb.).	Number of Daughters.				Mean Difference of Daughters from Expectation.
	Total.	Above Expectation.	Equal to Expectation.	Below Expectation.		Total.	Above Expectation.	Equal to Expectation.	Below Expectation.		Total.	Above Expectation.	Equal to Expectation.	Below Expectation.	
Nicotine ..	34	21	7	6	+24·3	35	20	9	6	+ 549	37	8	15	14	− ·06
Belligerent ..	17	6	2	9	− 6·6	17	6	2	9	− 301	18	8	6	4	+ ·12
Longford Major..	14	4	3	7	− 1·7	14	5	3	6	+ 304	15	0	7	8	− ·21
Tabacum ..	8	1	2	5	−54·1	8	0	1	7	− 1,935	8	5	3	0	+ ·40

Cows are counted as "equal to expectation" when they differ from expectation by less than 20 lb. of butter fat, 50 lb. of milk, or 20 points in test.

The table shows that Nicotine had 34 daughters available for this test. Of these, 21 were significantly above expectation—i.e., above what is to be expected from daughters of these mothers. Seven were approximately equal (within 20 lb.) to expectation, and six were significantly below expectation. Taking all the 34 daughters together, we find that they averaged 24.3 lb. above expectation.

This table, then, allows us to examine the performance of the bulls after making allowance for the influence of the mothers, and shows us the following:—

Nicotine raises both fat and milk, and leaves the test little altered.
Belligerent lowers both fat and milk, but milk more than fat, so test is raised.
Longford Major lowers fat and raises milk, and so lowers test.
Tabacum lowers both fat and milk, but milk much more than fat, and so raises test.

As further examples of the value of this method of disentangling the influence of sires and dams on the daughters, we can instance the following:—

Eighteen of Nicotine's daughters were out of mothers above the average for total fat production—the mean yield of these mothers being 388.9 lb., which is 46.6 lb. above the average. The average yield of their daughters (by Nicotine) was 380.5 lb.—that is, less than their mothers'. But the influence of these mothers alone should have produced daughters not the full 46.6 lb. above the average, but only $46.6 \times .292 = 13.6$ lb. above the average, or 355.9 lb. This was their most probable production under their mothers' influence only—that is to say, if Nicotine had been a perfectly average bull, exerting neither an improving nor degrading influence on his offspring. As a matter of fact, however, these daughters produced an average of 380.5 lb., or 24.6 lb. apiece above this expectation. So that although these daughters of Nicotine out of high-producing mothers were not quite such good performers as their mothers, this does not mean that Nicotine had a degrading influence on their production, but quite the contrary. He raised their average production 24.6 apiece above what their mothers would probably have produced to an average bull.

Longford Major got a daughter each out of Carribea and Velveteen. Both of these daughters gave more butter-fat than their mothers, which, however, were poor producers. Allowing for this in the above manner, we find that although both these daughters yielded more fat than their mothers did, yet both yielded less than such mothers may be expected to yield to an average bull.

The values of the coefficients of correlation and regression established in this paper are not theoretical values, but are obtained directly from the 96 pairs of mothers and daughters available for study. It is probable that the coefficients will become lower in course of time if selection is continued and new blood is not introduced.

Theory shows that .5 is the correlation coefficient between parent and offspring in the case of a complex character, the expression of which

depends upon the interaction of a large number of separate hereditary factors, and which is not sensibly influenced by environment. Such a character is exemplified by the case of stature in man, in which the correlation coefficient between parent and offspring is about .5, at any rate if we limit our material to a social class where the environment is uniformly fairly good, and therefore has little influence on the growth of children. In such a society differences in height are almost entirely due to inherent hereditary differences and are not caused by reason of exposure to different environments. The fact that in cattle the coefficient of correlation, or intensity of inheritance, for milk and butter-fat production is much lower than .5 indicates that the differences between cows are only partly genetic or constitutional differences capable of transmission to offspring; they are also partly due to diversities of environment acting on the animals, using the word environment in its widest sense to include feeding, care, and anything else which may affect the animal. Selection diminishes genetic differences by continually eliminating the worst animals, but does not, of itself, touch the environmental causes of diversity. Hence, with continued selection, the individuals get more uniform and a smaller and smaller proportion of the differences between them is due to genetic inheritable diversity. Therefore in such a herd good or bad cows will, on the average, transmit a smaller proportion of their goodness or badness to their offspring, and the coefficients of correlation and regression fall. Finally, the position is reached where the breed is "fixed" at a high level of performance, and further progress becomes practically impossible because all the animals have practically the same genetic constitutions, and such diversities of which they may exhibit are due almost entirely to accidents of environment, which are not transmissible to offspring, and therefore cannot serve as a basis for further progress by selection.

In such a herd, genetic diversity, resulting in inheritable differences capable of forming a basis for renewed selection, can be reintroduced by bringing in unrelated blood, if the breeder is willing to set the chance that some of this new variation will be in the desired direction, against the possibility that most of it will be in the direction of decreased rather than increased yield, and the practical certainty that much of the uniformity of breed which is so much prized will be lost.

CHARLTON CROP COMPETITION, 1925.

By L. C. Bartels, B.Ag.Sc., Senior Irrigation Officer.

The Charlton Crop and Fallow Competitions are on a comprehensive scale, and prizes are awarded for—

(*a*) The best 50 acres of Minister or Hard Federation wheat, grown on fallow judged in 1924. (The prize in this section is a trophy donated by Messrs. Noske Brothers.)

(*b*) The best 75 acres of crop grown on black fallowed land—judged in conjunction with the fallow.

(*c*) The best 75 acres of crop grown on red fallowed land—judged with the fallow.

(*d*) The best crop, not less than 150 acres—judged with the fallow; the whole of the competitor's crop to be shown.

Relation between Farming Methods and Crops.

The competitors were not numerous, but what the exhibits lacked in numbers they made up in general excellence. Very heavy crops were seen—crops which would be considered good in a normal year. Indeed, if one's inspection were confined to the competition crops, one would be led to doubt whether the Charlton district had experienced the same dry weather as other districts; but there was definite evidence that it had in the appearance of many of the crops passed on the tour of inspection, and in some instances only a fence divided a crop of the highest standard from one of most indifferent character.

There was a direct correlation between the crops obtained and the methods used to produce them, and it is safe to say that the reverses of this season will give a great stimulus to better farming, for the practices of the good farmers will be imitated. The methods which ensure good crops have been repeated so often that they must be well known. What is needed is encouragement to put them into practice.

Of primary importance is early fallowing and attention to fallows. Only when fallows have been well maintained do the other factors become fully operative. It is interesting to hear the experiences of farmers like Mr. Blackwood, who recalls the time when fallowing was first practised in the Murtoa district. It made such a marked difference in the yield that the neighbouring farmers would not be convinced that the wheat itself was not superior, and the produce of the crop was eagerly sought and bought at a premium for seed.

Manuring with superphosphate was in the experimental stage in 1901, and in that year Mr. Churchill, of Charlton, was one of the first who tried it. The remarkable influence of the fertilizer on the crop was so convincingly demonstrated that in 1902 a great number of farmers purchased drills and applied superphosphate with the seed. Disaster overtook them, because that year was one of drought, which is recalled by all but the younger farmers of to-day. But the practice of manuring had come to stay, and now its value is never questioned.

In paddocks sown "round and round," where the diagonal strip is sown to cover misses at turning, there is a part of the crop which receives double seed and manure. In Mr. F. Edwards' crop these strips were noticeably superior to the remainder of the crop, and one looked in vain for evidence of burning off which the "die-hards"

say will accompany liberal manuring. It must be emphasized that heavy manuring may be practised to advantage only on good fallow, and the farmer who hopes to make up for neglect in tillage operations by applying manure lavishly will be disappointed. Moreover, there is a limit where heavy manure ceases to be profitable. At Longerenong it has been shown that this limit is not reached even at 2 cwt. per acre.

It was rather a pleasing feature of the Charlton competitions to note the enterprise of farmers in trying different varieties of wheat, and some of the wheats exhibited were the latest products from our wheat-breeding stations. We have yet to find a wheat which will suit all conditions and fill all requirements, but farmers may be well advised to watch the results of variety tests throughout the wheat districts, and to try in small areas the varieties which come to them with a recommendation from the colleges and State farms. These new wheats are released only after exhaustive tests.

The Comfortable Residence of Mr. T. N. Judd.

Some Common Diseases.

Flag smut or leaf smut was a common feature in most of the crops, and loose smut was very common. These two diseases are separate and distinct, and they are different from ball smut or bunt. Each is caused by a definite organism, a fungus, and the black powder produced on affected plants is the numerous spores or seeds. Pickling seed is generally practised, and this is reflected in the entire absence of bunt; but, as farmers realize, this treatment is not effective against flag smut or against loose smut. Flag smut is best combated by the methods recommended for "take-all"—burning stubble, clean fallows, and consolidated seed beds, and the growing of oats in rotation with wheat. (Several crops of barley were observed this year, and it will not be out of place to state here that barley in rotation will not reduce the liability to "take-all.")

Loose smut is not so easily dealt with. Investigations have shown that it is spread by infection of the wheat at flowering time, and it enters the grain. The explanation for its prevalence this year must be looked for in last year's conditions. It is not affected by pickling. The hot water treatment, which consists in the immersion of the grain in hot water at a temperature of 132 deg. F. is an awkward method,

The best method of reducing the disease is to sow seed from crops which do not show much of it. It was noticeable that some crops were relatively free.

Most of the farmers at Charlton adhere to the bluestone and formalin methods of wheat pickling. The copper carbonate dusting method is becoming very common in other districts,

The Winning Crops.

In the competition for the Noske prize, Messrs. Blackwood and T. N. Judd were placed first and second respectively.

Mr. Blackwood showed a crop of Hard Federation, which made an excellent exhibit, dense and well headed, but with a little wild oats and some barley. There was a sprinkling of foreign ears, but not much disease was observed. The crop was very regularly sown. The crop of which this exhibit formed a part was sown with 75 lb. of seed and 110 lb. of manure. The wheat was pickled in a 1 per cent. solution of bluestone. It was put in during the latter half of June and harrowed wet after sowing. In all it received three scarifyings and seven harrowings. In autumn, 1924, the whole field of 165 acres was ploughed 4 inches deep with the set plough; in June it was harrowed twice. In July it was scarified and harrowed. At the end of September it was scarified again, and harrowed soon after. It was left till January and harrowed after rain. In preparation for cropping the ground was worked up with the scarifier to a depth of 2 inches to 2½ inches.

Mr. Judd's exhibit of 50 acres was a crop of Minister. It made a good exhibit, level and uniform, but with wild oats scattered throughout. A little flag smut was observed, but not much loose smut. A good many foreign ears were noticed.

This crop also was grown on land which had been in extended fallow. It was "summer fallowed" in March-April, 1924; ploughed wet in July-August to a depth of 3½ inches, harrowed after ploughing, cultivated in October, and harrowed and partly cultivated at the beginning of 1925. Prior to sowing it was spring cultivated to a depth of 2½ inches, and sown with the spring-tooth combine towards the end of June. The seed was treated with copper carbonate, and 90 lb. per acre, with 135 lb. of manure, was drilled in.

Best 75 Acres of Crop on Black Fallow.

In this section Messrs. Blackwood and Judd again occupied first and second places.

Mr. Blackwood's exhibit comprised 32 acres of Wannon and 43 acres of Federation wheat. The Wannon was a fine uniform crop. Some depressions existed in the area, but it was very regularly drilled, and reflected good workmanship. Wild oats were sprinkled through the crop, but there was only a negligible quantity of undergrowth. A little loose smut was noticed.

The Federation was a good crop, relatively pure and clean, and well drilled, with an almost entire freedom from disease. A few wild oats showed, and a little mustard. The cultural operations for this crop were as described above for the 50-acre section.

Mr. Judd's exhibit was also in two sections. There were 25 acres of Indian F x Federation which made an excellent exhibit, fairly

regular, with a slight sprinkling of wild oats. There was no undergrowth. A little loose smut was in evidence.

Currawa comprised two-thirds of the exhibit, and made a splendid show—clean and uniform, with a table top. An odd miss in drilling showed.

In preparation for this crop the land was fallowed in March-April, 1924, ploughed wet in July 3 inches deep, harrowed afterwards, cultivated in September, harrowed after rain in November, and partly cultivated early in 1925 to prevent blowing. The ground was later harrowed, and sown in June-July with 80 lb. of seed and 120 lb. super.

Mr. A. R. Blackwood's Crop of Federation.

75 Acres of Crop on Red Land.

Messrs. Maher Brothers were the only exhibitors of crop in the red soil section. They presented two exhibits, each having 25 acres of Major and 50 acres of Federation.

The Federation in "A" exhibit was comparatively dense, but wild oats were thick, and iron weed and saffron thistle showed. The Federation in "B" exhibit was less dense, and was dirty with wild oats and drake. There was very little loose smut, but flag smut was common. The Major was rather thin, and misses in drilling were noticed. The crop was sown with the spring-tooth combine at the end of May with 90 lb. of seed and 90 lb. of manure. The seed was pickled in formalin. The land was ploughed and harrowed in June, 1924. In October it was disc cultivated and spring-tooth cultivated. In November it was spring-toothed, in February harrowed, and spring-tooth cultivated 3 inches deep again in May.

Best Crop, not less than 150 acres, on fallow judged in 1924. The whole of the Competitor's Crop to be shown.

Mr. Blackwood's whole crop included the two exhibits above described, which were part of a field of 165 acres, and two other fields of 66 acres and 52 acres respectively. These two smaller fields were

on winter fallow, ploughed up in July, 1924, and worked at intervals with the scarifier and harrows.

The 52 acres was sown with the box plough from 26th to 30th May, with 75 lb. of seed and 90 lb. of manure; the 66 acres from 1st to 9th June, with 80 lb. of seed and 100 lb. manure. Half of this field was scarified and drilled, and the other half sown with the combine. The prevalence of wild oats detracted from the appearance of these earlier sown crops, which were comparatively dense, well headed and ripe. Not much smut was observed, but "dead heads" were common.

Mr. A. J. White's whole crop exhibit consisted of three paddocks. No. 1, 150 acres of Federation, No. 2, 50 acres of Hard Federation, and No. 3, 80 acres of Federation. Half of No. 1 paddock was summer fallowed, but the remaining crops were on land ploughed for fallow in July and August, 1924. The skim-plough, scarifier, spring-tooth cultivator and harrows, were all used in the cultivation of the

A Fine Crop of Currawa grown by Mr. T. N. Judd.

fallows. The big field was sown at the end of July with 90 lb. of seed and 90 lb. of super. At the time of inspection it was still green and presented a nice appearance, being fairly uniform and evenly drilled. Some tipping was apparent; wild oats and barley were noticed, but there was no undergrowth. Loose smut was common.

The 50 acres under Hard Federation was a comparatively dense crop, well headed, and clean except for wild oats.

The area of 80 acres was a particularly dense crop, flaggy, and fairly well headed, but showing evidence of the dry season. The wheat contained a proportion of strangers.

The arrangements for transport, &c., left nothing to be desired, and I have to thank Mr. Bennett and members of the committee for their hospitality.

Details of Points Allotted.

Name of Competitor.	Apparent Yield.	Trueness to Type.	Absence of Weeds.	Freedom from Disease.	Evenness of Crop.	Total.
Possible points	**35**	**20**	**15**	**15**	**15**	**100**
Section—50 acres of Crop—Minister or Hard Federation.						
A. R. Blackwood	35	18	13	14	14	94
T. N. Judd	33	18	13	14	14	92
A. J. White	27	19	14	13	13	86
F. Edwards	27	19	13	13½	12	84½
75 acres of Crop on Black Land.						
A. R. Blackwood	34	19	14	14	14	95
T. N. Judd	34	19	14	14	14	95
F. Edwards	33	17	13	13	14	90
A. J. White	35	16	13	13	12½	89½
D. O'Meara	27	19	13½	14	13½	87
75 acres of Crop on Red Land.						
Maher Bros., A Exhibit ..	24	18½	9	14	13	78½
Maher Bros., B Exhibit ..	19	18½	8	14	12	71½
Whole Crop, not less than 150 acres.						
A. R. Blackwood	32	18½	12½	14	13½	90½
A. J. White	29	18	13	14	13	87
F. Edwards	30	18	13	13½	12	86½
G. Cox	28	18	11	14	13	84
S. Perry	23	18	12	14	12	79

Aggregate Points—Fallow and Crop.

Competitor.	Fallow.	Crop.	Total.
Possible points	**100**	**100**	**200**
50 acres of Minister or Hard Federation on Fallow.			
A. R. Blackwood	100	94	194
T. N. Judd	97	92	189
A. J. White	100	86	186
F. J. Edwards	99	84½	183½
J. H. Peverill	67	(Not shown	..
Best crop on 75 acres Black Land, judged as Fallow in previous season.			
A. R. Blackwood	99	95	194
T. N. Judd	98	95	193
A. J. White	100	89½	189½
D. O'Meara	95	87	182
F. J. Edwards	90	90	180
J. Edwards	93	Not shown	..
Best 75 acres of Crop on Red Land, judged as Fallow.			
Maher Bros., "A" Exhibit	82	78½	160½
Maher Bros., "B" Exhibit	86	71½	157½
Whole Crop, not less than 150 acres, judged as Fallow.			
A. R. Blackwood	98	90½	188½
A. J. White	99	87	186
F. J. Edwards	97	86½	183½
Geo. Cox	94	84	178
S. Perry	86	79	165

MELTON DISTRICT HAY GROWING COMPETITION, 1925.

Report of the Judge, J. Brake, B.Ag.Sc., Chief Field Officer.

Last year a very definite step towards greater progress was made in the Melton district by the holding of an exhibition, controlled by the local schools committees, with a very enthusiastic secretary, Mr. R. H. Arthur.

It was recognized that the inclusion of a Hay Growing Competition in the programme would tend to link the farmers up in a movement towards better methods and increased production. To that end Mr. C. E. Barry, J.P., donated a first prize of £2 2s., and Mr. George Coburn a second prize of £1 1s., for the best crop of 25 acres or more of oats, wheat, or wheat and oats; the prize to go to the crop which had the highest market value at the time of judging.

Owing to the dry conditions experienced in the district during the year, crops were generally very short and light, although some fairly heavy yields were obtained where good fallowing had been carried out.

Mr. C. E. Barry and Mr. Arthur in the Winning Crop (Mr. T. Norton's).

The Competing Crops.

Three crops of oats, three "shandies", and one wheat crop were inspected on the 4th November, 1925, and all of them were well above the average for the district.

In judging, the possible number of points obtainable for apparent yield was 50, purity, type of grain, and colour 15, absence of weeds 15, absence of disease 15, and evenness 10.

The winner of the competition was Mr. T. Norton, who exhibited a crop of oats, which was an example of what can be produced by the use of good farming methods. It was of nice colour, even, and free from weeds and under-growth, although a little barley and wild oats were noticed and caused a loss in points.

The success of this crop was undoubtedly made possible by the very effective preparation which the paddock received; altogether it had had seventeen workings—skim ploughed to a depth of 3½ inches, then harrowed twice, ten times spring-toothed, harrowed, rolled, drilled, and rolled again. The crop was sown in May, with 80 lbs. of best seed oats and 130 lbs. of bone and superphosphate.

The second place went to Mr. V. Barclay, who showed an even crop of oats, about equal in yield to the winning crop, but inclined to be a little rank for prime hay. Points were lost on account of the presence of loose smut, a little barley, and a fair percentage of drake. This paddock was ploughed in October, spring-toothed three times, twice harrowed, rolled, drilled and rolled; it was sown at the end of April with 80 lbs. of oats and 90 lbs. of superphosphate.

Messrs. Wallace Brothers were third with a shandy crop of Mortgage Lifter oats and Warden wheat, sown with 3½-in. spacing between the rows. It was dense, but fairly short; the colour was not so good as that of the winning crop. There was a number of foreign varieties amongst the wheat. The crop was fairly clean from weeds, but a few barley heads and wild oats were noticed, whilst the wheat was affected to a certain extent with loose smut. The fallow was ploughed to a depth of 4 inches with a disc in July, three times spring-toothed, harrowed, ploughed again with a disc in February, harrowed, spring-toothed, drilled with 100 lb. seed and 80 lb. superphosphate per acre,

Two binders at work on Mr. I. Robinson's property.

harrowed and rolled. Although the paddock had had eleven workings, it was apparently necessary to disc a second time in February, thereby possibly damaging the seed-bed. Every effort should be made to maintain a permanent loose surface mulch on the fallow, and so avoid the use of a disc implement.

Mr. I. Robinson's crop lost points for undergrowth—some cape-weed on the lower ground. It was also a very uneven crop, with a fair amount of loose smut. The land was ploughed with a mouldboard in July, three times spring-toothed, drilled and rolled.

Messrs. Cook and Hunter.—Fairly even crop, but short and thin—still green—mixture of wheat present, also a lot of barley, but otherwise clean. Loose smut of wheat prevalent.

Mr. H. Moulynox.—Fairly well filled heads, but still green, a few foreign heads, wild oats, barley and small thistles present, loose smut very bad, fairly even and drilling fair.

Mr. H. Scarce.—Short uneven crop with a mixture of wheat present, weeds bad, barley, barley grass and thistles. Loose smut on wheat and smut on oats.

The detailed results are as follow:—

Name.	Crop.	Yield.	Type purity color.	Absence of Weeds.	Absence of Disease.	Even-ness.	Total.
Maximum Points ..	.. .. ..	**50**	**15**	**15**	**10**	**10**	**100**
T. Norton ..	Oats	38	14	13	9	9	83
V. Barclay ..	Oats	38	13	10	8	10	79
Wallace Bros. ..	Oats and Wheat ..	35	13	13	8	8	77
I. Robinson ..	Oats	36	13	11	8	6	74
Cook & Hunter ..	Oats and Wheat ..	32	13	12	8	9	74
H. Moulynox ..	Wheat	30	13	8	5	10	66
H. Scarce	Oats and Wheat ..	30	12	8	8	6	64

Mr. V. Barclay's Crop of Algerian Oats at Melton Park.

How Crops could be Improved.

From various conversations entered into during the judging it would seem that there is very little attempt made in the district to profit by the experimental work that is being carried on within eighteen miles of Melton, at the State Research Farm, Werribee.

Whilst farmers from far distant areas flock down in hundreds to the Farmers' Field Day at the Werribee Research Farm, and are demanding the establishment of similar institutions in their own districts, the people of Melton hardly know that the Research Farm exists: certainly not many of the local farmers have visited the farm.

I would suggest that the Exhibition Committee organize a special field day at a suitable time at the Research Farm. Arrangements could be made for one of the departmental officers to conduct the party round and explain the work. Enough private cars could surely be obtained to transport the party direct to the farm.

In conclusion, I should like to stress the importance in a district like Melton of two necessities for crop growth—moisture and superphosphate. As the rainfall at Melton is comparatively low, it is essential that additional moisture should be stored up and supplied to

the crop by bare fallowing. The amount of superphosphate it is profitable to apply depends to a large extent on the quality of the fallow, so that the better the fallow the more superphosphate should be used. It is useless increasing the superphosphate unless the soil is thoroughly worked.

The average results of eleven years show that at Werribee on good fallow, the most profitable amount of superphosphate to apply for hay or grain is 1½ cwt. per acre.

I wish to thank Messrs. C. E. Barry, J.P., Charles Woodley, and the secretary, Mr. R. H. Arthur, for their courtesy and help.

ELMORE CROP AND FALLOW COMPETITION, 1925.

Report of Judge, P. D. McRae, Field Officer.

This competition comprises two sections—(*a*) fallows worked in 1924-25, and judged some months ago; and (*b*) crops grown on those fallows. The holder of the highest aggregate of points in the two sections is to be the winner.

Owing to the dry season, some of the crops which had been entered did not come up to expectation, and were therefore withdrawn. Notwithstanding the adverse conditions, several fairly good crops were seen, and this fact suggests that under rational treatment more good crops should have been grown in the district than was actually the case. With the object of so improving and standardizing farming methods that failures may be reduced to a minimum, farmers are urged to give to these competitions, not only their passive support, but also to impart to them a keen and friendly rivalry, and to seek after and, when proved, adopt better practices in the assurance that by so doing they will be conferring an immense benefit both on themselves as individuals and on the district at large.

Details of Award.

50 acres of Fallow, and Wheat grown thereon.

Competitor.	Yield.	Purity.	Absence of Weeds.	Absence of Disease.	Evenness.	Total.	Fallow Award.	Aggregate.
Possible points ..	35	20	15	15	15	100	100	200
D. J. Murphy (*a*)	33	19	12	13	14	91	87	178
D. J. Murphy (*b*)	29	19	11	11	12	82	86	168
W. E. McKee ..	28	19	9	9	12	77	88	165
A. T. Dobell ..	26	18	13	11	10	78	79	157
P. S. Rasmussen ..	20	17	12	12	12	73	79	152
H. F. Carmody ..	15	18	11	8	9	61	90	151
Archibald & McKee	21	14	7	9	11	62	78	140
M. McNamara ..	18	18	7	7	13	63	76	139

Comments on the Crops.

Mr. D. J. Murphy ploughed his land to a depth of 4½ inches in July-August, and harrowed twice in September. It was then left until May when, after a fall of 1½ inches of rain, it was spring-toothed, sown at the end of the month with a combine, and harrowed. Seventy pounds of seed pickled with bluestone, and 90 lb. of superphosphate per acre were used.

Entry (*a*) was a particularly nice crop of medium height, level, and well headed, and with very little sign of tipping; it contained a few wild oats and some barley grass, and a very little loose smut. Three varieties were grown—Federation, Nizam, and Empire—and the seed having been obtained from Government institutions, the crop contained very few strangers.

Entry (*b*) was a very fair crop of Federation, but somewhat uneven on account of small patches of take-all, and a strip of lighter ground running through the paddock on which the crop had been burnt by dry weather. There appeared to be more barley grass and loose smut here than in the other entry, as well as some flag smut and a few wild oats.

Mr. W. E. McKee had a very useful crop of Dollar, fairly even and dense. Unfortunately, it had been badly infected with loose smut, and wild oats were numerous. The treatment of the land had been as follows:—Ploughed in August to a depth of 4-4½ inches, and harrowed, rolled and harrowed in July, springtoothed in August, again in September, and for the third time in the early part of May, after which it was sown with a combine and harrowed. The seed was pickled with copper carbonate and formalin, and sown during the second week in May at the rate of 70 lb. per acre, with 93 lb. of superphosphate.

Mr. A. T. Dobell's land was ploughed 4-3½ inches in August, and harrowed. In October it was springtoothed, again in March, and again in May, being drilled about the middle of that month. The seed was pickled with formalin, and sown at the rate of 60 lb. per acre, the variety being Federation, and 93 lb. of superphosphate was used. This crop was sown on freshly broken up land, and two distinct classes of soil were represented—one a heavy black soil, showing wide and deep cracks, and growing a dense, rather green and badly tipped crop; the other a red soil on which there was not such prolific growth, but which could probably have been made to yield much better.

Mr. P. S. Rasmussen's crop had been sown very late; it was not put in until the last week in June, and it was fed off with sheep for a week early in August. As a result it was short, green, and very dense, and on the lighter ground had wilted badly.

The failure of Mr. H. F. Carmody, after obtaining the leading place last year for the fallow on which this crop was grown, was disappointing, and was due to the presence of take-all which, in this case, certainly justified its name—the crop being ruined.

If we inquire as to the reason for the success of Mr. Murphy's crop, it will be seen that it was not due to a large amount of cultivation. It actually received less than any other crop in the competition. As already stated, it was ploughed in the winter, harrowed

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twice in the spring, and then left untouched until immediately prior to sowing. During May, however, there was a fall of 1½ inches of rain, previous to which some of the crops had been already sown, with the result that the soil would be beaten flat, and afterwards crack and the moisture escape. Mr. Murphy cultivated his ground after the rain, and used a combine for sowing. The cultivation at this stage would destroy weed growth, and at the same time conserve a large proportion of the rain which had fallen, thus ensuring to a large extent the success of the crop. In addition, the use of clean seed of a pure strain would have its effect.

It was observed that in some instances an attempt had been made by rolling and harrowing to work the soil into a fine condition early in the season. It appears doubtful whether, on the clay loams of the district, such a procedure is altogether wise. The object should be rather to keep the ground loose and open, and after the most diligent efforts in this direction it will probably be found that by seeding time it has become quite sufficiently consolidated.

The Prevalence of Disease.

The worst faults noticed in connexion with the crops inspected (and indeed generally throughout the district) were the prevalence of wild oats, take-all, flag smut, and loose smut. As it happens the treatment for the first three mentioned is practically identical, and consists in (1) a clean burn to destroy large numbers of disease spores, (2) an oat crop (one of the new early varieties for preference), which does not support the diseases, and which, for the sake of the wild oats, should be cut early for hay, and (3) a fallow kept perfectly free from growth of every kind, so that as the disease spores germinate in the warm, moist soil, they will die for lack of sustenance. If wheat then be grown a clean crop should be produced.

Perhaps the most practical method of dealing with loose smut, which is responsible for a tremendous amount of loss in the district, is to use only seed guaranteed to be from smut-free crops. This disease is distinct from stinking smut or bunt, against which various pickles are used effectively.

CLASSING FARMERS' WOOL.

(Continued from page 661, Vol. XXIII.)

By George Wallace McDonald, Lecturer in Wool, Melbourne University, and Head of Sheep and Wool Department, Gordon Institute of Technology, Geelong.

Why Farmers should Endeavour to Class Their Own Wool.

As previously stated, it is impossible to fix the exact number of classes into which wool should be divided, and the tables printed in the *Journal* for November last were drawn up as a rough guide for farmers when classifying their wool. The wool from some flocks may run from c b k to ½ B without any coarser wool. In such a case the clip would be separated into four classes—first comeback, comeback, ¼ B and ½ B—instead of grading it right out as shown in Table No. 9 (See *Journal* for November last, page 661).

A large number of farmers make no attempt to class their wool, but have this work done at the stores. Growers adopting this method should skirt and roll their fleeces neatly; they should be baled and the brand, number, and class shown on each bale; otherwise it will be necessary for the bales to be turned inside out at the stores. The wool will be carefully classed and baled at a flat rate of ¼d. per lb., and usually there will be keen competition for it among the buyers. All the same, I maintain that small growers, and even large growers, who handle their sheep efficiently all the year, should be able to prepare their own wool for market. One of the advantages to any man doing the work himself is that it gives him an opportunity of ascertaining which class of sheep give him the best return.

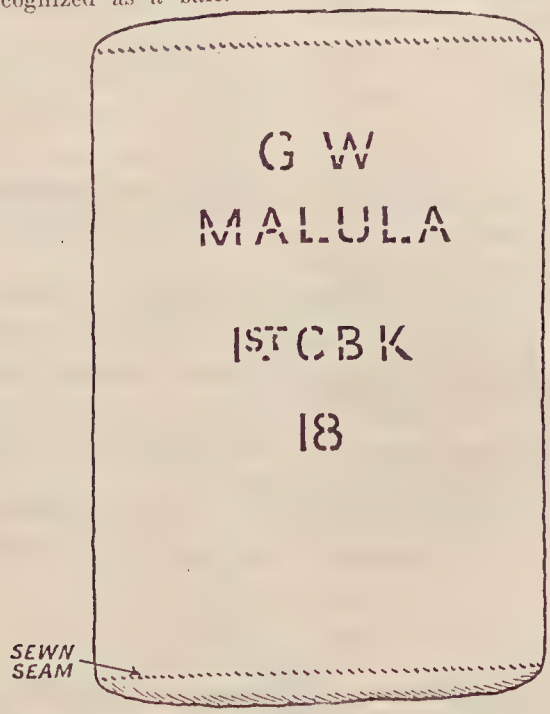
I would recommend that every grower should make some attempt to class his wool, and when forwarding the first clip classed by himself ask the broker to examine it and advise whether it would pay him to have the consignment reclassed, and, if so, to give particulars as to where mistakes were made.

If there be sufficient skirtings from a flock to be classed into firsts and seconds, it is worth taking care to do the job properly, for if sweaty ends are included amongst the firsts the work might as well not have been carried out at all. Stained wool around the pizzle should be carefully removed; often, owing to the work being done hurriedly a circle of stain remains in the belly and naturally decreases the value. Locks should be carefully picked so that no bulky pieces or dags will remain.

Filling the Bale, Branding, &c.

Having gone to the trouble of rolling and classing his wool, the farmer should seek the best wool-packs available, and where possible paper-lined packs should be used for super wools. In order to pack the bale place it in the press with the sewn seam to the fixed side; put the fleeces in two or three at a time without breaking them up

any more than can be helped. The bale weight should be about 300 lb., although 225 lb. of c b k or of crossbred and 250 lb. of merino wool is recognized as a bale. Thus if a farmer has 1,000 lb. of



Side of Bale showing Method of Branding.

Top of Bale.

merino wool it should be made into four bales of 250 lb. each—not three of 333 lb.; this will ensure the wool being sold in the big sale room.

The wool in the bale should be pressed down to a uniform height, and the three-screwer placed in both sides; then after releasing the ram fix the flaps from the open sides, first with one fastener in the centre, and then the other two flaps with three fasteners. Twine will serve instead of fasteners, but in no circumstances should binder twine be used, for when the bales are being opened it will be impossible to keep all the bits out of the wool, and as binder twine is made of hemp it will not dye.

Bales should be branded neatly with letters not less than 2½ inches in width. The use of long broad brands is to be discouraged; a mark such as W.R. or W in circle is sufficient. The initials of the grower or the name of his farm should be shown, as well as the class of wool and the number of the bale.

All bales must be weighed and the weights compared with the store weights. Often there will be a difference in the two, for while scales in the store have been carefully adjusted those in the shearing shed have probably not been tested; further, climatic conditions will cause variations in the weight of wool.

A note of all the bales should be made in the bale book. No matter how small a clip may be, a list specifying the classes and their weights should be sent to the brokers.

Hereunder is a sample page from a bale book in which a record has been made of a clip of 26 bales, and also a sample specification list of this wool to be supplied to the broker.

BALE BOOK.

BRAND— GW MALULA

1	CBK	10	¼B	19	CXB
2	1st CBK	11	FXB, Pcs	20	CXB, Pcs
3	CBK	12	CBK	21	1st CBK
4	CBK, Pcs	13	1st CBK	22	CXB, Pcs
5	1st CBK	14	¼B	23	XB, Bls
6	¼B	15	CBK, Pcs	24	CXB
7	CBK, Bls	16	CBK, Bls	25	LKS
8	1st CBK	17	CBK	26	STN
9	CBK, Pcs	18	1st CBK		

SPECIFICATION LIST.

Lot.	Brand.	No. Bales.	Class.	Individual No.	Remarks.
1	GW	6	1st CBK	2, 5, 8, 13, 18, 21	
2	MALULA	4	CBK	1, 3, 12, 17	
3		2	¼B	6, 10	
4		1	¼B	14	
5		2	CXB	19, 24	
6		3	CBK, Pcs	4, 9, 15	
7		1	FXB, Pcs	11	
8		2	CXB, Pcs	20, 22	
9		2	CBK, Bls	7, 16	
10		1	XB, Bls	23	
11		1	LKS	25	
12		1	STN	26	
		26			

APPLE ROOT BORER.

(*Leptops Hopei.*)

CONTROL EXPERIMENTS.

By C. French, Jun., Science Branch, and A. A. Hammond, Horticultural Division.

While all orchard trees are liable to be attacked by the Apple Root Borer, it is principally apple trees that suffer, and in many parts of the State commercial orchards have been affected by its ravages.

The destruction of the beetles by arsenical sprays and trapping has kept the pest in check, but this means of control, even when carefully carried out, has been only partially successful, owing to the fact that the grub's life in the soil is approximately five years.

After an application of bisulphide of carbon, affected trees made a better growth for a season, and this was taken as sufficient proof that the larvæ in the soil had been destroyed.

It was also thought that explosions of gelignite destroyed the grubs, as trees so treated in certain classes of soil made an improved growth. However, in the experiments under notice, both bisulphide of carbon and explosives proved to be ineffective for that purpose. The cause of the improvement in the growth of trees after an application of bisulphide of carbon is made clear by the discovery of Professor Oberlin, who states that an application of carbon bisulphide, at first, results in the decimation of both the useful and injurious species of bacteria. He goes on to say: "At a later stage a new bacterial flora appears in the soil, but there is a relative suppression of denitrifying forms, and a relatively rapid development of nitrifying bacteria, which results in the accumulation of nitrogen in a form readily available for plants."

The improved growth of trees noticeable after the use of explosives would be due, probably, to the increased root pasturage consequent on the breaking up of hard-pan and friable subsoil where such exists. Generally, however, the nature of the subsoil most congenial to the borer, is of such a character that the use of explosives does more harm than good.

To determine definitely the effect of the chemicals and explosives in regard to the destruction of the larvæ in the subsoil, all treated trees were grubbed, with the exception of check trees. The soil and subsoil to a depth of 3 feet was carefully examined, and notes taken of the position and condition of the grubs found. The area of the ground explored varied according to the size of the tree, the minimum being about 36 square feet. The length of time elapsing between the treatment and uprooting of trees varied from about two to eight weeks according to the insecticide used.

At the orchard of Mr. Johansen, at Warrandyte South, 50 apple trees were treated. These all showed evidence of being infested by the borers. The trees were all more or less debilitated; some of them were nearly dead, and on others there were many dead limbs.

Two apple trees were treated at Messrs. Burgi Brothers' orchard at Wandin, and three at the Park Orchard, Ringwood. The object of the latter experiments was to ascertain the effect of the treatment in different classes of subsoil.

At Mr. Johansen's orchard grubs were turned up at a depth of from 6 inches to 2 feet. At Wandin grubs were found as deep as 5 feet below the surface. Most of the grubs were about 20 inches deep in the heavy clay subsoil. Many pupæ were discovered close to the surface.

In a large number of cases no grubs could be found, although the most careful search was made. Probably they had completed their metamorphoses and the beetles had gone to other trees. It would appear that dying trees are deserted by the beetles.

Another matter deserving mention is that some trees which had the appearance of being badly affected had only a few roots tunnelled. The dying off of the tops of branches was evidently not due to their being deprived of sap by the inroads of the borer. An examination of injured roots by the Government Biologist disclosed the presence of ferment bacteria, and the death of branches was due, very probably, to the creation of toxin in the sap by this bacteria. The effect of the damaged roots on the tree would thus appear to depend largely on the chemical nature of the soil.

The undermentioned insecticides and soil fumigants were used in the experiments:—Chloro-picrin gas, paradichlorobenzene, sulpho-carbonate of potassium, sulpho-carbonate of soda, bisulphide of carbon, corrosive sublimate, liquid hydrocyanic acid, sulphate of iron, phenyle, tar water, pestend, and lotol.

The results from the use of pestend tar water and liquid hydrocyanic acid were negative, as no grubs, dead or alive, could be found in the treated soil. The effect of the other chemicals used was more or less definite, as will be seen below.

The only explosives used were gelignite and common blasting powder. Blasting powder was used solely for the purpose of loosening the soil to permit of the penetration and dispersal of insecticides and fumigants. The amount of powder used in every case was ¾ lb. per charge, which was exploded at a depth of about 20 inches under the tree.

Small charges of gelignite for the purpose of loosening the soil were discarded after a few trials, as it was found that these made pot holes and compacted the soil near the charge. An attempt to destroy the grubs by exploding heavy charges of gelignite was made. The results are given in detail below.

Explosions of Gelignite.

Nine trees were treated with charges of gelignite. The strength of each charge varied from one-third of a stick to two sticks. The number of charges per tree varied from one to seven. The depth at which charges were exploded ranged from 20 to 36 inches.

When a tree was given several charges holes were bored the required depth and equidistant, covering a radius of 3 to 4 feet from the stem of tree.

The use of gelignite was entirely unsatisfactory in all classes of soil in which it was used. With the large charges pot holes were blown in the heavy clay 18 inches in diameter.

When the soil and subsoil was examined a few hours after explosions live grubs were found within 6 inches of pot holes. All the treated trees were uprooted a few hours after treatment, and the earth in the vicinity of the charges carefully examined. Many live and uninjured grubs were found, but none dead or injured.

In the friable subsoils better results were expected, but even here live and apparently uninjured grubs were found close to where charges were exploded. In all cases the grubs removed from the soil were kept under observation for several weeks.

Soil Fumigants and Insecticides.

Chloro-Picrin Gas.

Two trees treated 22nd May, 1922; soil examined sixteen days later. No. 1 tree.—One oz. of chloro-picrin in phial exploded by dynamite cap in each of four holes 24 inches deep. No. 2.—Similar treatment to No. 1 except that 6 oz. of gas was used, and half a stick of gelignite exploded in each of six holes prior to application of gas. Results.—Five live grubs and two dead found under trees. Live grub found 6 inches from gas charge.

Bisulphide of Carbon.

Treated one tree 14th July; uprooted 29th July. Charge 1 oz. in each of five holes, 3 feet from stem, 20 inches deep. Charge of powder used to loosen soil. Result.—Five grubs found. All appeared affected, but recovered and lived for several weeks after removal from soil. All grubs taken from soil in midwinter were apparently almost lifeless.

Phenyle.

Treated three trees 27th July; uprooted 18th August. Solution, one part phenyle to 60 parts of water. Used 8 gallons per tree. Result.—Three grubs found alive; none dead.

Corrosive Sublimate.

Two trees treated 18th August; uprooted 29th August. Strength of mixture ¼ oz. to 10 gallons of water. Five gallons of solution used per tree. Soil loosened by explosion of powder. Result.—Ten grubs found under trees; seven alive and three dead.

Lotol.

Two trees treated 20th November; uprooted 19th December. Used 1 pint of lotol in each of five holes on roots of one tree, and ½ pint in each of five holes on the roots of the other. Result.—Two grubs found alive; none killed.

Paradichlorobenzene.

Treated six trees. Three trees treated on 29th July, and three on 23rd November. Dosage varied from ¾ oz. per tree to 3 oz. per tree. Some trees uprooted fourteen days later and some 30 days later. Results.—Three grubs found alive; none destroyed.

Sulpho-Carbonate of Soda.

Two trees treated 27th July; uprooted 29th August. Used 6 gallons of 3 per cent. solution to each tree. Density of stock 20 deg. Baumé. Explosive used to loosen subsoil. Result.—Nine grubs found apparently lifeless; these were kept under observation and recovered.

Sulpho-Carbonate of Potassium.

In all sixteen trees were treated with sulpho-carbonate of potassium. Trees were treated in June, 1922, and January, July, October, and December, 1923. The strength of the solutions varied from 1½ per cent. to 3 per cent., and the quantity of liquid applied to each tree from 8 gallons in the winter to 36 gallons in the summer. Two trees were treated on 22nd June, 1922, with a 3 per cent. solution. One of these was taken out on 14th July. The other was left as a check. An area of about 50 square feet to a depth of 2 ft. 9 in. was explored in the case of the uprooted tree. Six grubs were found in the subsoil at depths ranging from 18 inches to 24 inches. All were dead and discoloured. The strength of the stock mixture was 28 deg. Baumé, 11 per cent. carbon disulphide. Eight gallons of solution per tree was used.

In January, 1923, six trees were treated at Mr. Johansen's orchard. Four trees were treated with 18 gallons of a 2 per cent. solution and one tree with 36 gallons at the same strength. One tree was left as a check. Results.—Grubs were found alive under all trees taken out twenty days later.

In July, 1923, experiments were made on seven trees with solutions varying from 1½ per cent. to 3 per cent. Six weeks later the trees were uprooted and the subsoil explored. Unfortunately grubs were found under only one of the trees. In this case they were all dead and discolored. Nine grubs in all were found in the clay from 18 to 22 inches deep, and from 12 to 24 inches from stem of tree. Hole dug 6 feet in diameter and 2 feet deep. Eight gallons of a 3 per cent. solution was used on this tree. A charge of ¾ lb. of powder was exploded 2 feet deep before liquid was applied in this case. Three of the trees in this experiment were treated with explosives, but as no grubs could be found no comparison could be made.

In October one tree was treated at Mr. Val Kerr's Park Orchard. Twelve gallons of a 2 per cent. solution was applied. Four weeks later an examination of the soil was made. Only one grub was found, and it was alive. The soil was dry when the tree was treated. Experiments begun at Kilsyth in December could not be completed owing to the outbreak of fruit-fly at Mildura. Some of the grubs taken from the soil lived for over three months without food. No injury was noticeable from the effects of the chemicals used, but as most of the trees were half dead a good deal of damage would have to be done before it would be noticeable.

Summary.

The use of gelignite to destroy grubs proved to be quite ineffective. In heavy clay soils the blowing of pot holes would do much harm. No harm would be done in friable clay soils by its use, and probably much good where hard pan existed.

Ordinary blasting powder was effective in loosening the soil, but no comparison could be made as to the increased efficiency of insecticide when applied with and without an explosion.

Sulpho-carbonate of potassium gave excellent results when applied in the depth of winter when the soil was saturated. During summer and when the soil was dry in late spring, it proved quite ineffective, although a much larger quantity of the solution was used.

Paradichlorobenzene from which much was expected gave disappointing results. It was tried in both winter and summer.

Further experiments with sulpho-carbonate of potassium are in the opinion of the writers warranted. The cost for material works out at about 1s. 8d. per tree.

APPLE EXPORTS DURING 1925.

Reasons Suggested for Collapse of Market during Latter Part of Season.

In a report on the 1925 Australian apple season the White Service, the well-known English and European fruit brokers, say:—

"The season opened on 27th March with the arrival of the s.s. *Mooltan* with 37,102 boxes of apples, which met with a very good reception. The fruit was of good quality, but very green and immature, especially the Jonathans. The early supplies were exceptionally fortunate in only having to meet a very meagre competition with the Oregon crop, which has been an adverse factor on so many occasions in the past. Another contributing factor to the auspicious opening was the general shortage of other fruits, particularly oranges, the shipments to London of which for the week ending 28th March were 45,000 half-cases, as compared with 85,000 half-cases for the corresponding week in 1924.

There was a slight decline in prices after the first arrival, but as soon as the fruit was more mature and attractive in appearance, the demand was greatly strengthened by keen buying for export, and values steadily advanced up to the middle of June. Generally speaking, the condition throughout the season was good, there being comparatively few exceptions in this respect.

Although bitter pit and black spot were not so prevalent—in the latter respect those mostly affected were Tasmanian—the general opinion of both receivers and buyers was that a very large proportion of the fruit lacked the quality and appearance of recent years. Sturmer Pippins particularly were not up to their usual standard.

The first break in prices occurred about the third week in June, when the Continental demand became less active owing to the expected arrival in Hamburg of the s.s. *Abbekerk* with 27,589 boxes, which coincided with supplies of their early summer fruits. This was closely followed by heavy supplies of strawberries and other soft fruits in this

country, and as the public invariably clamours for a change from hard fruits, especially when abundant supplies of soft fruits are available at popular prices, it was not surprising that there was a further decline in prices. At this stage many buyers, thinking that the market would eventually recover, as was the case the preceding year, commenced to operate on a large scale, and so accumulated stocks far beyond their immediate requirements.

The high prices previously realized undoubtedly checked consumption, and many buyers instead of lowering their prices to meet competition with other fruits, adopted the policy of maintaining prices, being doubtless under the impression that the decline was only of a temporary nature, but as the market continued to fall, many holders were compelled to work off their stocks and cease operating even upon a small scale. Arrivals still continued to be heavy. This, together with the slow demand, compelled speculators and holders of large stocks to force their holdings upon the market. Large quantities of this fruit, much of which had previously been purchased from the brokers, was, after being kept in store for a considerable period, again handed back to the brokers and also to commission agents throughout the country with definite instructions to sell out as rapidly as possible, thus depressing the market still further.

The quantity landed in London during the period under review, namely, the third week in June to the middle of July, was approximately 460,000 boxes, of which about 252,000 boxes were landed between the 1st and 16th of July.

We are strongly of the opinion that the interests of the whole trade would have been better served if distribution had not been so unequal, and some of these cargoes consigned to northern ports. Stocks would have moved more freely and there would have been less deterioration with a corresponding increase in the average prices realized. Liverpool and Hull could have taken a much large quantity without lowering prices, at the same time relieving London, which undoubtedly was congested with this fruit.

In our opinion the collapse of the Australasian apple market can be attributed in the main to the following causes:—

1. Excessive concentration on the London market, particularly at the end of the season.
2. The exceptionally hot weather experienced in the United Kingdom, which caused apples of usually good keeping qualities to ripen rapidly after discharge.
3. Reports that the apples re-exported to the Continent were arriving in weak condition.
4. Dissatisfaction on the part of Continental buyers due to the forward condition of the fruit on arrival, which caused them to cease operations.

In conclusion, one cannot urge too strongly upon shippers in Australasia the importance of distributing their apples to the main British fruit ports. In our opinion excessive concentration on London has affected very materially the welfare of the Australasian trade, as there is no doubt that both Liverpool and Hull should receive a very much larger proportion of the shipments than they have in past years.

THE JONATHAN APPLE IN COOL STORAGE.

By J. E. Harrison, B.Ag.Sc.

During the season a number of experiments were instituted with the object of checking previous results, and of gaining further information regarding the keeping quality of the Jonathan apple in cool storage. The experiments decided upon were temperature and maturity tests. In practically every instance the fruit was obtained

Jonathan Apples affected with Scald.

from a single tree. This was regarded as the surest way of obtaining truly comparable fruit. The practice of wrapping was not followed. In fact, as last year's results were so conclusive that nothing was to be hoped from either plain or oiled papers in the control of soft scald of the Jonathan, no further wrapping tests were made this year.

The results set out hereunder appear definite in their indications. We may state, briefly, in regard to temperature, that better results have been obtained at 37 deg. F. than at either 32 deg. F. or 34 deg. F. No soft scald developed at 37 deg. F., and much less internal breakdown than at the two lower temperatures.

The soft brown lesions of soft scald, usually large and clearly outlined are well known.

Internal breakdown is also a familiar condition of apples stored for any length of time. Apples infected are commonly said to be "sleepy" or "punky"; they are soft and dead to the touch, and the flesh is brown, either in parts or wholly.

Jonathan spot mars the appearance of an apple. It is purely superficial, and does not affect the flesh. Infected apples are dotted with few or many small brown spots. In the centre of each of these spots there is often to be seen a clearly defined lenticel or breathing pore.

The occurrence of mould in the experiments was greater than usual; this, perhaps, may be ascribed to the extra handling which the fruit received.

In many of the experiments the same apples became infected with both soft scald and internal breakdown. A separate count was then made for each disease. It is noteworthy that soft scald occurred in early storage and internal breakdown in late storage.

In most of the experiments two examinations are recorded. Where this is so, the second examination was made upon all or most of the fruit remaining sound after the first examination.

Temperature Tests.

On 29th March three cases of Jonathan apples, picked from one tree, were forwarded by a Harcourt grower and stored at different average temperatures immediately on their arrival at the Government Cool Stores. Examination on 13th July and on 22nd October gave the following results:—

TABLE I.—TESTS AT VARIOUS TEMPERATURES WITH HARCOURT APPLES.

	13th July.			22nd October.		
	32 deg.	34 deg.	37 deg.	32 deg.	34 deg.	37 deg.
Sound	110	105	127	67	73	76
Soft Scald	14	7	..	..	..	..
Mould	4	1	4	8	12	22
Breakdown	..	..	..	13	11	5
Jonathan Spot (See note) ..	..	..	..	6	9	20

NOTE.—In this and in all other experiments only apples marked distinctly with a fair number of spots were counted.

This table shows that soft scald occurred at 32 deg. and 34 deg., and not at 37 deg., and that there was less breakdown, but more mould and a greater development of Jonathan spot at 37 deg. than at lower temperatures.

A similar test was carried out with fruit from a Hastings grower. The three cases, which were from one tree, were gathered on 19th

March, and examined on 21st July, and 22nd October, with the following result:—

TABLE II.—TESTS AT VARIOUS TEMPERATURES WITH HASTINGS APPLES.

	21st July.			22nd October.		
	32 deg.	34 deg.	37 deg.	32 deg.	34 deg.	37 deg.
Sound	147	158	144	107	130	109
Soft Scald	4	2	..	..	..	..
Mould	..	..	..	5	5	..
Breakdown	..	..	..	25	18	..
Jonathan Spot	3	15	29	(No count)	(No count)	29

These results agree very closely with those of Table I., though curiously enough in the Hastings apples no mould developed at 37 deg.

A third similar test was carried out with fruit from Pakenham. It was sent in early March, and examined in July and October.

TABLE III.—TESTS AT VARIOUS TEMPERATURES WITH PAKENHAM APPLES.

	21st July.			19th October.		
	32 deg.	34 deg.	37 deg.	32 deg.	34 deg.	37 deg.
Sound	155	132	129	87	58	107
Soft Scald	6	12	..	..	..	..
Mould	..	..	3	1	..	..
Breakdown	..	..	..	66	74	13
Jonathan Spot	..	..	4	..	..	9

In this table the amount of loss through breakdown is particularly noticeable at the lower temperatures.

In Table IV. following, the result is given of a temperature test with fruit from Drouin. In this instance, however, the fruit was obtained from two trees. It was sent in March, and examined in July and October.

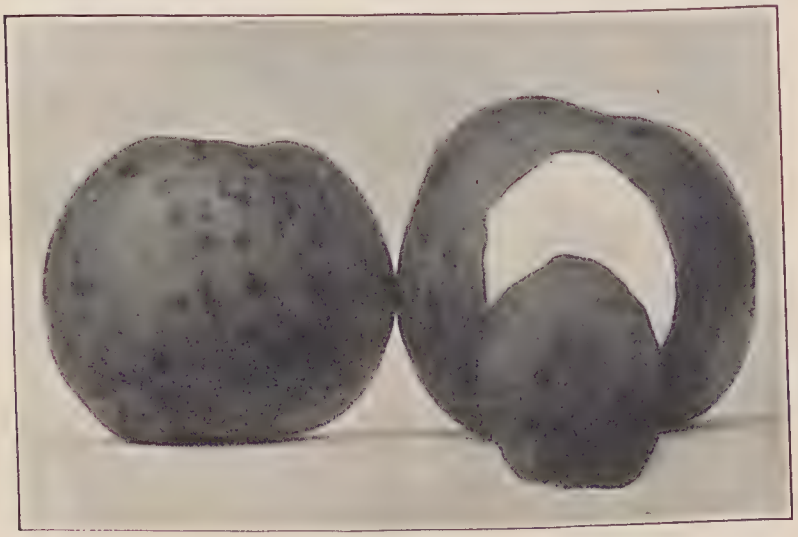
TABLE IV.—TESTS AT VARIOUS TEMPERATURES WITH DROUIN APPLES.

	31st July.		22nd October.	
	34 deg.	37 deg.	34 deg.	37 deg.
Sound	160	170	85	111
Soft Scald	..	..	..	..
Mould	1	4	(No count)	10
Breakdown	14	5	75	42
Jonathan Spot	..	..	..	..

Evidence of the ill effect of low temperatures was obtained through the discovery that the temperature varied in different parts of an experimental chamber. The direct expansion system of refrigeration was used, and the ammonia pipes ran from the floor upwards along one wall only. A set of small beakers containing a salt solution was placed on the floor near the corners of the chamber, a similar set was placed near the ceiling, and a third in an intermediate position. Thermometrical readings were made on several occasions after the

chamber had remained closed for a few days, and a definite graduation in temperature was found rising from the floor upwards, and from the ammonia pipes across the chamber.

The fruit with which the experiment was carried out consisted of two cases of apples, picked in about equal proportions from three trees together in the same row. The soil in which they were growing was a sandy loam. The fruit was highly coloured, sound, and considered to be of excellent keeping quality. It was gathered in March, and both cases received identical handling until stored in the same chamber, when one (*a*) was placed on a rack near the ammonia pipes, and the other (*b*) on another rack higher up and on the opposite side of the chamber. The average temperature of the chamber was 32 deg. F.,



Jonathan Spot.

while the average difference between the two parts of the chamber where the cases were stored was from 2 to 3 deg. F. An examination on 14th October gave the following results:—

Table V.—Temperature Tests in Different Parts of the Same Chamber.

—	Case (*a*).	Case (*b*).
Sound	95	109
Soft Scald	18	..
Breakdown	47	10
Jonathan Spot	..	38

In case (*a*) of the eighteen apples affected with soft scald, thirteen had breakdown also, and are included in the total number (47) so affected. Only apples distinctly marked with Jonathan spot were included in the count under that heading. It was a peculiar feature

of the apples of case (*a*) that any trace of Jonathan spot was so faint as scarcely to be noticeable, and did not mar the appearance of the fruit, which after all is the only effect this disease has upon sale and quality. The points of most importance are that soft scald occurred freely, and that there was a large amount of breakdown at the lower temperature.

Experiments with Fruit from lightly cropped trees.

It was considered that in the above experiments, the fruit could be regarded as picked from heavily-cropped trees, and by way of comparison two cases were gathered from lightly-cropped trees in the orchard of the Hastings grower previously mentioned, and were stored one at each temperature as before. Examinations were made in July and October with the following results:—

TABLE VI.—TESTS WITH APPLES FROM LIGHTLY CROPPED TREES (HASTINGS).

	July 30th.		22nd October.	
	34 deg.	37 deg.	34 deg.	37 deg.
Sound	135	115	89	70
Soft Scald	..	..	..	..
Mould	..	..	1	2
Breakdown	..	3	30	12
Jonathan Spot	23	38	16	31

In addition a case of fruit from various lightly cropped and stunted trees and trees in damp situations was obtained from Pakenham, and stored at an average temperature of 32 deg., with the following result:—

TABLE VII.—TESTS WITH APPLES FROM LIGHTLY CROPPED TREES (PAKENHAM).

	2nd September.	14th October.
Sound	130	105
Breakdown	4	23
Soft Scald	5	..

The results expressed in Tables VI. and VII. do not show any particular tendency on the part of fruit from lightly-cropped trees towards soft scald and breakdown.

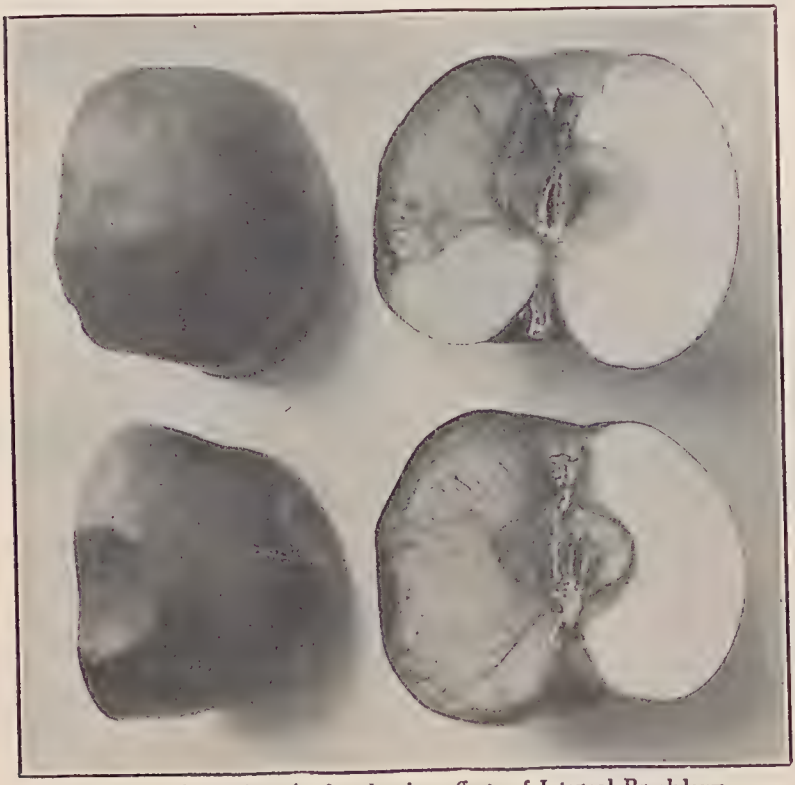
Apples from Various Parts of the Same Tree.

It is often considered that apples from various parts of the same tree vary in their susceptibility to soft scald and breakdown in storage. To test this, one case (*a*) was made up of fruit from the exposed parts of three leafy trees, and another (*b*) from the shady portions within the trees and near the butts. The fruit was picked on 27th March,

stored at an average temperature of 32 deg., and examined on 3rd August and 14th October with the following results:

TABLE VIII.—TESTS WITH APPLES FROM VARIOUS PARTS OF TREE.

	3rd August.		14th October.	
	(*a*)	(*b*)	(*a*)	(*b*)
Sound	107	116	39	37
Soft Scald	17	7	..	..
Mould	3	3	1	2
Breakdown	..	..	66	77
Jonathan Spot	..	..	..	..



Sections of Jonathan Apples showing effects of Internal Breakdown.

These results are not regarded as giving support to the idea which led to the test being made.

Effect of Stage of Maturity.

Two trials were made to test how far the keeping quality of Jonathan apples was affected by the degree of maturity at the time of picking.

The first was with fruit from Hastings, in which two cases from the same tree were used. One was picked on 10th March and the

other on 19th March, both cases being stored at an average temperature of 32 deg. within 24 hours of picking. An examination on 22nd October gave the following results:—

TABLE IX.—TEST TO SHOW EFFECT ON KEEPING QUALITY OF STAGE OF MATURITY AT PICKING TIME.

	Fruit picked 10th March.	Fruit picked 19th March.
Sound	50	99
Soft Scald	23	4
Breakdown	81	35
Spot	1	4

The second trial was made with fruit from Harcourt. Three cases were obtained, the first being picked on 3rd March, the second on 16th March, and the third on 6th April. The apples were all from the same tree. They were stored at an average temperature of 32 deg., and an examination on 31st August gave the following result:—

TABLE X.—TEST TO SHOW EFFECT ON KEEPING QUALITY OF STAGE OF MATURITY AT PICKING TIME.

	Fruit picked 3rd March.	Fruit picked 16th March.	Fruit picked 6th April.
Sound	126	16	36
Soft Scald	2	72	71
Breakdown	..	54	30
Mould	6	4	6

Although the results of these two trials are apparently contradictory, they show that there is a stage of maturity which gives best results in storage. This stage was approached and reached by the time of the second picking at Hastings, while at Harcourt the first picking was made at the proper time, and later pickings exceeded it.

In regard to a recommendation to the grower as to the stage of maturity at which to harvest, we can only warn him against (1) picking green, and (2) allowing the fruit, once it is ripe, to remain on the trees.

Jonathan Spot.

The above experiments show distinctly that this trouble occurs most frequently in fruit stored at higher temperatures. As stated previously, however, it is superficial and mars the appearance only of the fruit, while with either soft scald or internal breakdown the whole fruit is lost for the purposes of sale.

A review will further show that in some instances no Jonathan spot developed, *vide* Tables IV. and VIII. The fruit of both lots was only of medium colour.

The fruit used in the experiment recorded under Table VIII. was from leafy trees, growing in a loamy soil.

For the purposes of comparison we may take Table V. The fruit used in this test was highly coloured, and gathered from rather small,

heavily cropped trees, with comparatively few leaves, growing in a sandy loam in the same orchard. Both lots received identical treatment before storing.

The first lot was entirely free from spot, while the latter developed a fair percentage. This suggests that the greater exposure to the sun perhaps rendered the lenticels porous. Harmful substances gaining entrance might thus cause the injury. Though this conclusion is speculative, it suggests a line of investigation it is hoped to follow.

An encouraging report on the control of lenticel spotting of Newton Wonder and of Bramley's Seedling is made by Kidd and Beaumont, *Ann. Appl. Biol.*, 1925, 12, p. 30. These authors found that the use of wrappers impregnated with refined mineral oil was effective in preventing the development of lenticel spotting. If the disease is identical with that which develops in our Jonathan apples then we may look forward to considerable relief from the same source.

Temperature Tests at Country Cool Stores.

As regards the commercial use of a higher temperature, we may mention the chamber being run at 37 deg. F. in the Harcourt Cool Stores. The growers storing in this chamber were satisfied with the results this season, and it is their intention to continue to store at this temperature. Another store, the Croydon Co-operative Cool Store, also ran a chamber at this temperature. The results were satisfactory, and the trial is to be continued next season. It is recommended that other stores should make similar trials.

Summary.

Several trials were made of the effect of different temperatures upon Jonathan apples in storage. Soft scald was found to occur at 32 deg. F. and 34 deg. F., and not at 37 deg. F. Internal breakdown occurred worse at 32 deg. F. and 34 deg. F. than at 37 deg. F. On the other hand there was a greater development of mould at the highest temperature. There was a considerable amount of handling given the fruit, however, and mould was thought to develop more than normally. Jonathan spot is more pronounced at the highest temperature. It causes less economic loss, however, than either soft scald or internal breakdown.

Fruit from lightly-cropped trees was not found to be specially susceptible to either soft scald or internal breakdown.

Apples from exposed and from shady portions of the same tree were not found to differ in their keeping quality.

The effect of the stage of maturity at picking time is considered. Growers are advised not to pick their fruit green, and once it is ripe not to allow it to remain on the trees.

A comparison is made between apples which became affected with Jonathan spot in storage and those which remained free from it. It is suggested that exposure to the sun may affect the porosity of the lenticels or breathing pores of the apple. A report from England is mentioned on the control of an apparently similar disease by the use of oiled papers.

Mention is made of the Harcourt and the Croydon Co-operative Cool Stores, each of which has run a chamber at 37 deg. F. with satisfactory results.

LIST OF ARTIFICIAL FERTILIZERS REGISTERED UNDER THE FERTILIZERS ACT FOR THE YEAR 1926.

R. Rankin Scott, Chemist for Agriculture.

The Artificial Fertilizers Act imposes certain obligations on the manufacturer and importer of artificial fertilizers. Among the most important are:—(*a*) Registration of brands; (*b*) Supply invoice certificates on sale of a brand of fertilizer; and (*c*) Labelling every package.

What is a Fertilizer?

The definition under the Act is any material containing nitrogen, phosphoric acid, or potash, which has been manufactured, prepared, or produced in any manner for the purpose of fertilizing the soil or supplying nutriment to the plant, but does not include farm-yard or stable manure, or any crude night soil, crude offal, or other unmanufactured refuse.

Registration of Brands.

All manufacturers or importers of fertilizers who intend offering for sale any such material as above defined, shall, on or before the first day of November in each year, make an application to the Director of Agriculture for the registration of a brand for each of such fertilizers. All applications must set forth on the prescribed form the name and place of business of the applicant, the brand to be associated with the fertilizer, and analysis of the fertilizer, stating the percentage of each fertilizing ingredient, and the respective form in which they occur, and the retail price per ton of the fertilizer at headquarters.

Invoice Certificate.

If not at time of sale, then before delivery of any fertilizer, the vendor shall give the purchaser an invoice certificate in the form prescribed by the Act, stating the name of the seller, the name of the buyer, the weight purchased, the name and brand of the fertilizer, and the percentage of nitrogen, phosphoric acid, and potash, and the forms in which they occur in the fertilizer. It is essential that the purchaser should not only obtain but keep the invoice certificate covering each lot of fertilizer purchased, it being the seller's guarantee of the fertilizer sold, and in the case of any dispute as to quality the production of the invoice certificate is essential.

Labelling.

Every parcel of fertilizer sold should have a plainly printed label securely affixed to such parcel, showing clearly and truly the name of manufacturer, the registered brand, the analysis stating the percentage of nitrogen, phosphoric acid, and potash, in the respective forms in

which they occur in the fertilizer, and the nett weight of the fertilizer in the parcel.

Unit Values.

The unit is the value of 1 per cent. of nitrogen, phosphoric acid, or potash in one ton of fertilizer.

The unit value may serve a useful purpose if put into application. The value of any brand can be calculated only on the fertilizer constituents guaranteed by the vendor. To apply the unit values, the buyer must first ascertain what the seller guarantees, and by multiplying the percentage of the ingredient by the unit value given in table for the form in which it is present, he will be able to arrive at its commercial value.

By way of illustration the following examples are given:—

Blood and Bone Fertilizer.

Guaranteed to contain—			
Nitrogen as blood and bone			5.47%
Phosphoric acid, citrate soluble			5.44%
Phosphoric acid, citrate, insoluble			8.10%
Phosphoric acid, total			13.54%
Nitrogen as blood and bone, unit value			£1 1 0
Phosphoric acid as citrate soluble, unit value			0 5 0
Phosphoric acid as citrate insoluble, unit value			0 4 6
Nitrogen	5.47% x £1 1 0	=	5 15 0
Phosphoric acid	5.44% x 0 5 0	=	1 7 3
Phosphoric acid	8.10% x 0 4 6	=	1 16 6
Value per ton			£8 18 9

Bonedust.

Guaranteed to contain——			
Nitrogen as bone			3.73%
Phosphoric acid			19.50%
Mechanical condition—			
Fine bone			38.50%
Coarse bone			61.50%
The nitrogen as fine bone	3.73% x 38.50	=	1.43%
The nitrogen as coarse bone	3.73% x 61.50	=	2.30%
The phosphoric acid as fine bone	19.50% x 38.50	=	7.50%
The phosphoric acid as coarse bone	19.50% x 61.50	=	12.00%
Nitrogen as fine bone, unit value			£1 1 0
Nitrogen as coarse bone, unit value			1 0 0
Phosphoric acid as fine bone, unit value			0 5 0
Phosphoric acid as coarse bone, unit value			0 4 6
Percentage of Constituent x Unit Value.			
Nitrogen as fine bone	1.43 x £1 1 0	=	£1 10 6
Nitrogen as coarse bone	2.30 x 1 0 0	=	2 6 0
Phosphoric acid as fine bone	7.50 x 0 5 0	=	1 17 6
Phosphoric acid as coarse bone	12.00 x 0 4 6	=	2 14 0
Value per ton			£8 7 6

Fertilizers Act 1915.

LIST OF UNIT VALUES FOR THE YEAR 1926.

		£	*s.*	*d.*
Nitrogen, as Blood	per unit	1	2	0
„ Nitrate	„	1	1	3
„ Blood and Bone	„	1	1	0
„ Bone and Flesh	„			
„ Fine Bone	„			
„ Coarse Bone	„	1	0	0
„ Ammonia	„	0	16	6
Phosphoric Acid—				
as *Water Soluble*	„	0	5	0
as *Citrate Soluble*	„			
as Fine Bone	„			
as *Citrate Insoluble*—				
in Blood and Bone	„	0	4	6
Bone and Super	„			
Super and Bone	„			
Complete Manures	„			
Market Garden Manures	„			
Basic Phosphates	„			
as Coarse Bone	„			
Ground Phosphate	„			
in Super and Phosphate	„	0	2	8
Potash and Phosphate	„			
Ammonia and Phosphate	„			
Cresco Mixed	„			
Superphosphate	„	0	1	0
Nitro-super	„			
as Roasted and Finely Ground	„	0	5	10
Potash as Sulphate	„	0	5	10
„ Chloride	„	0	4	10

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mainly Nitrogenous.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Nitrate of Soda ..	Federal, S.N. ..	15·50	..	..	..	..	15·50	..	..	..	..	..	16 10 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	15·50	..	..	..	..	15·50	..	..	..	..	..	16 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond	15·50	..	..	..	..	15·50	..	..	..	..	..	16 10 0	The Mount Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	15·50	..	..	..	..	15·50	..	..	..	..	..	16 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	Cresco	15·00	..	..	..	..	15·00	..	..	..	..	..	16 10 0	Cresco Fertilizers Ltd., North Geelong
Sulphate of Ammonia ..	Federal, A.S. ..	..	20·00	..	..	..	20·00	..	..	..	..	..	16 10 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	..	20·00	..	..	..	20·00	..	..	..	..	..	16 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond	..	20·00	..	..	..	20·00	..	..	..	..	..	16 10 0	The Mount Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	20·00	..	..	..	20·00	..	..	..	..	..	16 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	M.G. Co., in diamond	..	20·59	..	..	..	20·59	..	..	..	..	..	16 0 0	The Metropolitan Gas Company, Flinders-street, Melbourne
,, ,, ..	Cresco	..	20·00	..	..	..	20·00	..	..	..	..	..	17 10 0	Cresco Fertilizers Ltd., North Geelong
Blood Manure	Federal	..	..	7·50	..	..	7·50	..	..	..	..	..	8 5 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ...	Sickle	..	..	7·50	..	..	7·50	..	..	..	..	..	8 5 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ...	Cockbill's	..	..	8·50	..	..	8·50	..	..	..	1·00	..	8 10 0	J. Cockbill, 407 Post Office-place, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Fresh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mainly Nitrogenous—continued.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Blood Manure	Mt. Lyell, M.L., in diamond	..	..	7·50	..	..	7·50	..	..	..	..	..	8 5 0	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
.. ..	M.C.C., in diamond ..	..	..	7·51	..	..	7·51	..	..	..	1·46	0·59	7 0 0	Melbourne City Council, City Abattoirs, Smithfield-road, Flemington
.. ..	Pannifex	..	..	7·50	..	..	7·50	..	..	..	1·00	0·25	12 0 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
.. ..	Wischer and Co. Pty. Ltd.	..	..	7·50	..	..	7·50	..	..	..	..	..	8 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Dried Blood	Brooklyn, T.B. and S., in diamond	..	..	12·00	..	..	12·00	..	..	..	..	..	12 0 0	Thos. Borthwick and Sons (A'asia), Ltd., 84 William-street, Melbourne
.. ..	Pannifex	..	..	11·00	..	..	11·00	..	..	..	0·50	1·10	16 0 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
.. ..	Arch	..	..	11·20	..	..	11·20	..	..	..	4·10	..	12 0 0	Ballarat and District Co-op. Freezing Co. Ltd., Learmonth-street, Alfredton, Ballarat
Castor Meal	Alba	..	..	..	..	..	5·00	..	..	..	2·00	2·00	5 10 0	Lycett Propty. Ltd., Normanby-road, South Melbourne
Mainly Phosphatic. Readily Soluble.														
Superphosphate ..	Federal, 22 per cent.	..	..	..	..	..	..	20·50	0·50	1·00	22·00	..	5 5 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
.. ..	Cockbill's, 22 per cent.	..	..	..	..	..	..	20·50	0·50	1·00	22·00	..	5 5 0	J. Cockbill, Post Office-place, Melbourne
.. ..	Sickle. Florida, 22 per cent.	..	..	..	..	..	..	50·50	0·50	1·00	22·00	..	5 5 0	Cuming, Smith, and Co. Pty. Ltd. 65 William-street, Melbourne
.. ..	Mt. Lyell, M.L., in diamond	..	..	..	..	..	..	20·50	0·50	1·00	22·00	..	5 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
.. ..	High grade super, 22 per cent.													

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mainly Phosphatic—Readily Soluble—continued.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Superphosphate ..	Wischer Co. Pty. Ltd., 22 per cent.	..	..	..	..	..	..	20·50	0·50	1·00	22·00	..	5 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ..	Cresco, 22 per cent. ..	..	..	..	..	..	..	20·50	0·50	1·00	22·00	..	5 5 0	Cresco Fertilizers Limited, Geelong
Moderately Soluble.														
Super and Phosphate ..	Federal	..	..	..	..	..	..	10·25	1·50	19·25	31·00	..	5 5 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	..	..	..	..	..	..	10·25	1·50	19·25	31·00	..	5 5 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond	..	..	..	..	..	..	10·25	1·50	19·25	31·00	..	5 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	10·25	1·50	19·25	31·00	..	5 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	Cresco, 30 per cent. phosphate	..	..	..	..	..	..	10·00	1·50	19·50	31·00	..	5 5 0	Cresco Fertilizers Ltd., Geelong
,, ,, ..	Cresco phosphatic, guano and super	..	..	..	..	..	..	10·30	3·45	6·65	20·40	..	5 10 0	,, ,, ,,
Basic Phosphate ..	Federal, B.P. ..	..	..	..	..	..	..	..	14·00	3·00	17·00	..	5 2 6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	..	..	..	..	..	..	..	14·00	3·00	17·00	..	5 2 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond	..	..	..	..	..	..	..	14·00	3·00	17·00	..	5 2 6	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	14·00	3·00	17·00	..	5 2 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mainly Phosphatic—continued. *Slowly Soluble.*		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Ground Phosphate ..	Federal, G.P., 80 per cent.	..	..	..	..	..	..	..	..	..	36·65	..	4 17 6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
„ „ ..	Sickle, 80 per cent. ..	..	..	..	..	..	..	..	..	..	36·65	..	4 17 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
„ „ ..	Mt. Lyell, 80 per cent., M.L., in diamond	..	..	..	..	..	..	..	..	..	36·65	..	4 17 6	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
„ „ ..	Mt. Lyell, 60 per cent., M.L., in diamond	..	..	..	..	..	..	..	..	..	27·43	..	4 5 0	„ „ „ „
„ „ ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	..	..	36·65	..	4 17 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Roasted and intensely ground Phosphate	Victoria Phosphate ..	..	..	..	..	..	..	3·0	12·00	15·00		..	4 8 6	The Phosphate Co-op. Coy. of Aust. Ltd., 440 Little-Collins-street, Melbourne
Unroasted and coarsely ground Phosphate	Victoria Phosphate, No. 3	..	..	..	..	..	..	..	..	14·00	14·00	..	2 16 0	„ „ „
„ „ „	Victoria Phosphate, No. 4	..	..	..	..	..	..	..	..	11·00	11·00	..	2 5 0	„ „ „
Phosphatic guano ..	Cresco	..	..	..	..	..	..	6·85	13·40	20·25		..	5 10 0	The Cresco Fertilizers Ltd., Geelong
Mainly Potassic. *Readily Soluble.*														
Muriate of Potash ..	Federal	..	..	..	..	..	..	..	..	..	..	50·00	12 0 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
„ „ ..	Sickle	..	..	..	..	..	..	..	..	..	..	50·00	12 0 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
„ „ ..	Mt. Lyell, M.L., in diamond	..	..	..	..	..	..	..	..	..	..	50·00	12 0 0	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
„ „ ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	..	..	..	50·00	12 0 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
„ „ ..	Cresco	..	..	..	..	..	..	..	..	..	..	50·00	12 0 0	The Cresco Fertilizers Ltd., Geelong

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mainly Potassic—Readily Soluble—continued.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Sulphate of Potash ..	Federal	..	..	..	..	..	..	..	..	..	..	50·00	14 10 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
.. .. ..	Sickle	..	..	..	..	..	..	..	..	..	..	50·00	14 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
.. .. ..	Mt. Lyell, M.L., in diamond	..	..	..	..	..	..	..	..	..	..	50·00	14 10 0	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
.. .. ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	..	..	..	50·00	14 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
.. .. ..	Cresco	..	..	..	..	..	..	..	..	..	..	48·50	14 10 0	The Cresco Fertilizers Limited, Geelong
Containing Nitrogen and Phosphoric Acid. Readily Soluble.														
Nitro-Super	Federal, N.S. ..	..	1·50	..	·50	..	2·00	15·37	1·08	1·65	18·10	..	6 15 0	The Australian Chemical and Explosives Co. Ltd., 370 Little Collins-street, Melbourne
.. .. ..	Sickle	..	1·50	..	·50	..	2·00	15·37	1·08	1·65	18·10	..	6 15 0	Cuming, Smith, and Co. Pty. Ltd. 65 William-street, Melbourne
.. .. ..	Mt. Lyell, M.L., in diamond	..	1·50	..	·50	..	2·00	15·37	1·08	1·65	18·10	..	6 15 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
.. .. ..	Wischer and Co. Pty. Ltd.	..	1·50	..	·50	..	2·00	15·37	1·08	1·65	18·10	..	6 15 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Moderately Soluble.														
Blood, Bone and Super ..	Federal, B.B.S. ..	..	..	..	2·50	..	2·50	11·28	1·67	2·35	15·30	..	7 0 0	The Australian Chemical and Explosives Co. Ltd., 370 Little Collins-street, Melbourne
.. ..	Sickle	..	..	..	2·50	..	2·50	11·28	1·67	2·35	15·30	..	7 0 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
.. ..	Cockbill's	..	..	..	2·50	..	2·50	11·18	2·00	5·00	18·18	..	7 5 0	J. Cockbill, 407 Post Office-place, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Containing Nitrogen and Phosphoric Acid—Moderately Soluble—continued.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Blood, Bone, and Super..	Mt. Lyell, M.L., in diamond	..	..	..	2·50	..	2·50	11·28	1·67	2·35	15·30	..	7 0 0	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,,	Wischer and Co., Pty. Ltd.	..	..	..	2·50	..	2·50	11·28	1·67	2·35	15·30	..	7 0 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Bone and Super ..	Federal, B.S., No. 1 ..	..	..	..	2·00	..	2·00	11·00	3·07	4·14	18·21	..	7 5 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	..	..	..	2·00	..	2·00	11·00	3·07	4·14	18·21	..	7 5 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Gardiner's	..	..	..	1·39	..	1·39	8·00	3·20	5·80	17·00	..	6 10 0	Geo. Gardiner and Co. Pty. Ltd., Marshall, Geelong
,, ,, ..	Bendigo, Rohs in circle	..	..	..	..	2·00	2·00	9·00	4·00	6·00	19·00	..	9 0 0	P. Rohs Pty. Ltd., Grassy Flat, Bendigo
,, ,, ..	Mt. Lyell, M.L., in diamond, No. 1	..	..	..	2·00	..	2·00	11·00	3·07	4·14	18·21	..	7 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	..	..	2·00	..	2·00	11·00	3·07	4·14	18·21	..	7 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Super and Bone ..	Federal, S.B. ..	..	..	.	..	1·00	1·00	15·75	1·79	2·57	20·11	..	6 10 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
.. .. ..	Sickle, Mixed "C" ..	..	..	..	..	1·00	1·00	15·75	1·79	2·57	20·11	..	6 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
.. .. ..	Mt. Lyell, M.L., in diamond, No. 2	..	..	..	..	1·00	1·00	15·75	1·79	2·57	20·11	..	6 10 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
.. .. ..	Wischer and Co. Pty. Ltd.	..	..	..	..	1·00	1·00	15·75	1·78	2·57	20·10	..	6 10 0	Wischer and Co. Pty. Ltd., 189 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2052) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Containing Nitrogen and Phosphoric Acid—continued. *Slowly Soluble.*		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Blood and Bone ..	S.C., in diamond ..	..	..	..	6·50	..	6·50	..	5·50	6·50	12·00	..	9 10 0	Sims and Cooper Co. Aust. Pty. Ltd., 34 King-street, Melbourne
,, ,, ..	T.B. and S., in diamond, Brooklyn	..	..	..	6·00	..	6·00	..	4·50	8·00	12·50	..	9 0 0	Thos. Borthwick and Sons (A'sia) Ltd., 84 William-street, Melbourne
,, ,, ..	Rohs, in circle, Bendigo	..	..	..	6·00	..	6·00	..	5·00	6·00	11·00	..	11 0 0	P. Rohs, Pty. Ltd., Grassy Flat, Bendigo
,, ,, ..	Arc	..	..	..	6·00	..	6·00	..	5·00	7·00	12·00	..	8 17 6	H. C. Pannifex & Co., 26 Market-street, Melbourne
,, ,, ..	Pannifex's, No. 1 ..	..	..	..	6·00	..	6·00	..	5·00	8·00	13·00	..	9 0 0	,, ,, ,,
,, ,, ..	Cockbill's	..	..	..	5·50	..	5·50	..	4·00	10·00	14·00	..	10 0 0	J. Cockbill, 407 Post Office-place, Melbourne
,, ,, ..	Pannifex's, No. 2. ..	..	..	..	5·50	..	5·50	..	5·00	7·00	12·00	..	8 10 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
,, ,, ..	Pannifex's, No. 4 ..	..	..	..	5·50	..	5·50	..	5·00	10·00	15·00	..	8 16 0	,, ,, ,,
,, ,, ..	Pridham's	..	..	..	5·34	..	5·34	..	9·37	8·00	17·37	..	8 10 0	W. Pridham Pty. Ltd., Box 10 P.O., Footscray
,, ,, ..	Lighthouse ..	..	..	..	5·50	..	5·50	..	5·50	8·00	13·50	..	8 0 0	Thos. Bothwick and Sons (A'sia.) Ltd., 84 William-street, Melbourne
,, ,, ..	Arch	..	..	..	5·26	..	5·26	..	4·90	11·90	16·80	..	8 10 0	Ballarat and District Co-op. Freezing Co. Ltd., Learmonth-street, Alfredton, Ballarat
,, ,, ..	W. and M., in circle ...	..	..	..	6·00	..	6·00	..	4·50	5·50	10·00	..	12 0 0	Western and Murray Co-op., Bacon and Meat Packing Co. Ltd., 522 Flinders-lane, Melbourne
,, ...	Federal, B.B. ..	..	..	..	5·00	..	5·00	..	7·00	9·00	16·00	..	9 5 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Containing Nitrogen and Phosphoric Acid -Slowly Soluble—continued.														
Blood and Bone ..	Sickle	..	..	..	5·00	..	5·00	..	7·00	9·001	16·00	..	9 5 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	DBC, in triangle ..	..	..	..	5·00	..	5·00	..	4·00	6·00	10·00	..	8 10 0	Gippsland Co-op. Bacon Curing Co. Ltd., Dandenong
,, ,, ..	Mt. Lyell, M.L., in diamond	..	..	..	5·00	..	5·00	..	7·00	9·00	16·00	..	9 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	H.C.P.	..	..	..	5·00	..	5·00	..	4·75	5·25	10·00	..	8 5 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	..	..	5·00	..	5·00	..	7·00	9·00	16·00	..	9 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Bone Fertilizer ..	Federal, B.F. ..	..	..	..	4·00	..	4·00	1·50	5·64	7·28	14·42	..	8 7 6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle	..	..	..	4·00	..	4·00	1·50	5·64	7·28	14·42	..	8 7 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond	..	..	..	4·00	..	4·00	1·50	5·64	7·28	14·42	..	8 7 6	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd.	..	..	..	4·00	..	4·00	1·50	5·64	7·28	14·42	..	8 7 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	Ark ..	..	..	..	..	3·50	3·50	..	3·98	12·90	16·88	..	7 0 0	Arthur Murphy, Ararat
,, ,, ..	Bailey Bros. ..	..	..	..	..	2·50	2·50	..	6·50	9·50	16·00	..	6 15 0	Bailey Bros., Mount Clear, Ballarat
,, ,, ..	Samson's	..	..	..	..	2·00	2·00	..	2·00	15·00	17·00	..	6 10 0	Geo. Gardiner and Co. Pty. Ltd., Marshall, Geelong
,, ,, ..	No. 1, Magic ..	..	..	..	..	2·00	2·00	..	2·00	15·00	17·00	..	6 10 0	,, ,,
,, ,, ..	Cockatoo	..	..	..	..	3·81	3·81	..	6·50	12·16	18·66	..	7 0 0	R. Fordham, " Cressy-road, Camperdown

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Mixed Fertilizers—Containing Nitrogen, Phosphoric Acid and Potash. Readily Soluble.		%	%	%	%	%	%	%	%	%	%	%	£ s. d.	
Complete Manure ..	Federal, No. 1 ..	..	2·50	..	..	..	2·50	12·82	0·31	0·62	13·75	7·50	8 12 6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle, No. 1 ..	..	2·50	..	..	..	2·50	12·82	0·31	0·62	13·75	7·50	8 12 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond, No. 1	..	2·50	..	..	..	2·50	12·82	0·31	0·62	13·75	7·50	8 12 6	The Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd., No. 1	..	2·50	..	..	..	2·50	12·82	0·31	0·62	13·75	7·50	8 12 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	Anglo - Continental Guano	..	4·87	..	..	..	4·87	8·85	2·39	1·37	12·61	1·89	19 0 0	Gibbs, Bright, and Co., Queen-street, Melbourne
,, ,, ..	Dissolved Guano, A.L.	..	5·00	..	..	..	5·00	7·00	1·50	1·50	10·00	1·47	19 0 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
,, ,, ..	Federal No. 2 ..	..	1·00	1·00	..	..	2·00	12·30	0·30	0·60	13·20	5·00	7 10 0	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle, No. 2 ..	..	1·00	1·00	..	..	2·00	12·30	0·30	0·60	13·20	5·00	7 10 0	Cuming, Smith and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond, No. 2	..	1·00	1·00	..	..	2·00	12·30	0·30	0·60	13·20	5·00	7 10 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
,, ,, ..	Wischer and Co. Pty. Ltd., No. 2	..	1·00	1·00	..	..	2·00	12·30	0·30	0·60	13·20	5·00	7 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
,, ,, ..	Federal, No. 3 ..	..	..	..	2·00	..	2·00	8·71	3·01	4·03	15·75	6·25	8 7 6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
,, ,, ..	Sickle, No. 3 ..	..	..	..	2·00	..	2·00	8·71	3·01	4·03	15·75	6·25	8 7 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
,, ,, ..	Mt. Lyell, M.L., in diamond, No. 3	..	..	..	2·00	..	2·00	8·71	3·01	4·03	15·75	6·25	8 7 6	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.			Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		£	s.	d.	
		%	%	%	%	%	%	%	%	%	%	%				
Mixed Fertilizers - Containing Nitrogen, Phosphoric Acid, and Potash—Readily Soluble—continued.																
Complete Manure ..	Wischer and Co. Pty. Ltd., No. 3	..	..	..	2·00	..	2·00	8·71	3·01	4·03	15·75	6·25	8	7	6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Market Garden ..	Federal, M.G. ..	..	1·50	..	1·56	..	3·06	11·15	1·67	2·35	15·17	2·50	8	2	6	The Australian Explosives and Chemical Co. Ltd., 370 Little Collins-street, Melbourne
„ „ ..	Sickle	..	1·50	..	1·56	..	3·06	11·15	1·67	2·35	15·17	2·50	8	2	6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
„ „ ..	Mt. Lyell, M.L., in diamond	..	1·50	..	1·56	..	3·06	11·15	1·67	2·35	15·17	2·50	8	2	6	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
„ „ ..	Wischer and Co. Pty. Ltd.	..	1·50	..	1·56	..	3·06	11·15	1·67	2·35	15·17	2·50	8	2	6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Mixed Manure ..	Cresco	..	1·50	..	..	..	1·50	9·60	1·40	8·70	19·70	7·50	7	10	0	Cresco Fertilizers Ltd., Geelong
Bone and Potash ..	Mt. Etna, No. 4 ..	..	..	..	..	3·50	3·50	..	6·50	10·50	17·00	2·00	14	19	0	Swallow and Ariell, Mildura
Phosphate and Potash ..	Victoria Phosphate and Potash Sulphate	..	..	..	..	..	..	..	4·00	9·50	13·50	5·00	8	6	0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne
Ammonia and Phosphate	Cresco	..	2·00	..	..	..	2·00	10·00	2·00	18·00	30·00	..	6	15	0	The Cresco Fertilizers Ltd., Geelong

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1926—*continued.*

Description of Fertilizer.	Brand.	Nitrogen.	Phosphoric Acid.	Mechanical Condition.		Price asked per ton.	Where Obtainable.
				Fine Bone.	Coarse Bone.		
		%	%	%	%	£ s. d.	
Bonedust	I. A. Dundas ..	4·42	21·15	35·00	65·00	9 0 0	I. A. Dundas, Dynon-road, Footscray
,, ...	Horse Shoe ..	3·95	20·00	52·00	48·00	8 15 0	P. Fitzgerald and Sons, Warrigal-road, Bentleigh
,, ...	Magic	3·00	18·00	45·00	55·00	7 15 0	George Gardiner and Co. Pty. Ltd., Marshall, Geelong
,, ...	Bendigo, Rohs, in circle	4·00	18·00	45·00	55·00	9 10 0	P. Rohs Pty. Ltd., Grassy Flat, Bendigo
,, ...	Pannifex, No. 5 ..	4·16	17·50	20·00	80·00	9 0 0	H. C. Pannifex and Co., Market-street, Melbourne
,, ...	Nova	3·75	18·00	30·00	70·00	8 15 0	,, ,, ,, ,,
,, ...	Pannifex's ..	4·00	20·00	20·00	80·00	9 10 0	,, ,, ,, ,,
,, ...	Mt. Clear	3·00	18·00	30·00	70·00	7 0 0	Bailey Bros., Mount Clear, via Ballarat
,, ...	Eclipse	3·27	24·59	60·40	30·60	10 0 0	Thomas A. Mills, Spec Gully, Golden Square, Bendigo

25th November, 1925.

P. RANKIN SCOTT,
Chemist for Agriculture.

STALLION REGISTER 1925-26.

under the "Horse Breeding Act 1919."

Registrations prior to 31st August, 1925.

PART. II.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs			
585	Laird Again ..	A	,, ..	Davey, P. ..	Miners' Rest
657	,, O'Gourie ..	A	,, ..	Wal, A. ..	Rushworth
367	Lancashire Chief ..	5	,, ..	Bunworth, R. ..	Woomelang
135	,, Lad ..	A	,, ..	Robinson, W. ..	Armstrong
287	Langdale ..	6	,, ..	Donnellan, M. ..	Jeffcott North
703	Latest Style ..	A	Light ..	Stray, C. ..	Kilmore
58	Leading Fashion ..	6	,, ..	Stillman, A. ..	King Island
412	Lee Creek Squire ..	A	Draught ..	McConachey, T...	Winchelsea
166	Leo's Pride ..	A	Pony ..	Small, Miss G. ..	Glen Iris
269	Le Rosier ..	A	Light ..	Parish, Emily ..	Horsham
746	Leroy II. ..	A	Pony ..	O'Leary, M. ..	Penshurst
494	Lewis Dillon ..	4	Light ..	Lewis, S. J. ..	Maldon P.O.
980	Lieutenant Mac ..	A	Draught ..	Rowe E. ..	Yarroweyah Nth.
586	Light O'Frisco ..	A	Light ..	Radcliffe, F. C. ..	Kyabram
94	Lion Prince ..	A	Draught ..	Hurley, J. F. ..	Bobinawarrah
270	Little Bill ..	A	Light ..	Corner, A. T. ..	Fosterville P.O.
199	,, Comet ..	A	Pony ..	McNally, T ..	Seymour
136	,, Eumarrah	A	,, ..	Painter, R. ..	Leaghur
633	,, Jack Horner	A	,, ..	Mathews, J. ..	Upper Delegate River, via Orbost
587	,, Jim ..	A	,, ..	Cole, H. J. ..	Castlemaine
855	,, Lonsdale ..	A	,, ..	Coxon, W. E. ..	Nangeela
460	,, Welshman	A	,, ..	Cameron, J. ..	Timor West
200	,, Milton ..	A	Draught ..	Hives, Jas. ..	Tempy P.O.
841	Lochaber ..	A	Light ..	Cochrane & Sons, W.	Pootilla
201	Lord Aldie ..	A	Draught ..	Mackieson, S. E.	Buchan
305	,, Allan ..	5	,, ..	Barnes, T. W. ..	Berriwillock
553	,, Armadale ..	A	,, ..	Lee, H. ..	Clunes
850	,, Bally ..	A	Pony ..	Kenna, J. F. ..	Pura Pura
332	,, Clarrie ..	A	,, ..	Smith, R. ..	Naringal
605	,, Dalmier ..	A	Draught ..	Harders, E. W. ..	Dimboola
337	,, Dillon ..	6	Light ..	Lewis, S. J. ..	Maldon
117	,, Everest ..	A	Draught ..	Ladson, G. R. ..	Mincha, W.
461	,, Jellico ..	A	,, ..	McMahon Bros.	Ouyen P.O.
462	,, Northcote ..	A	,, ..	Hicks, Wm. ..	Miram
342	,, Plunton ..	A	,, ..	Runceman, M. J. and J. J.	Swan Hill
326	,, Ronald ..	A	,, ..	Sharrock, W. ..	Vite Vite
249	,, Threave ..	A	,, ..	Schmidt, W. J. ..	Jeparit
413	,, Wallace ..	6	,, ..	Smith, C. ..	Dumosa, P.O.
99	,, Welkin ..	A	Thoro'bred	Carmichael, D. H.	Swan Hill
362	Mac	4	Pony ..	Fraser, W. ..	Watchem
779	Macedon Hero ..	6	Draught ..	Evans, B. ..	Woodfield
271	Magician ..	A	,, ..	Adkins, T. ..	Korumburra
289	Magic Railway ..	6	Pony ..	Wilkins, Jessie ..	278 Toorak-road, South Yarra
428	Main Stanley	4	Draught ..	Harty, T. ..	Corack East
217	Major Dale ..	A	,, ..	Forster, J. ..	Boort E.
711	,, Douglas ..	5	,, ..	Dahlenberg, V. ..	Winnia E., via Nhill

* Part I. published in this Journal for November, 1925.

STALLION REGISTER, 1925–26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
945	Major Jock ..	A	Draught ..	Glanwill, F. C. ..	Echuca North
699	,, Lawrence ..	A	,, ..	Stephens, J. ..	Gisborne
109	,, Ribbonwood	A	Light ..	Grabsch, F. W. ..	Horsham
685	,, Style ..	6	Draught ..	Daldy, P. ..	Arcadia South
849	,, Thornley ..	A	,, ..	Payne, P. C. ..	Hopetoun P.B.
524	,, Willie ..	4	,, ..	Alexander, A. S.	Diapur
463	Malacca	A	Light ..	Beattie, W. P. ..	Dookie
443	Maltage ..	A	Thoro'bred	Fairbairn, F. W.	Kerrisdale
415	Maori	A	Draught ..	Müller, K. ..	Carwarp
93	,, Chief ..	A	Light ..	Caldow, J. ..	Winchesea
603	,, Jack ..	A	Draught ..	Potter, A. ..	Naroghid
730	March Along ..	5	,, ..	Carr, H. ..	Manangatang
914	Marchfield ..	4	,, ..	Skelly, J. ..	St. Arnaud
44	Marcus	A	Light ..	Craig, W. E. J. ..	8–22 Elizabeth-st., Melbourne
55	,, Junior ..	6	,, ..	Blair Bros. ..	Lara
140	Maringa ..	A	,, ..	McIntyre, A. C.	Brit Brit P.O., via Coleraine
174	Mark	6	Draught ..	Studman, W. ..	Lucknow
989	,, Hazel ..	5	Pony ..	Henshaw, S. ..	Corryong
14	Markhope (imp.) ..	A	Thoro'bred	Trustees Rupert J. Clarke	Bolinda Vale, Lancefield Junction
343	Marmaduke ..	A	Pony ..	Gillies, A. J. ..	Noorat
719	Marquis Bold ..	5	Draught ..	Turnbull, W. ..	Wedderburn
254	,, Derby ..	A	Light ..	Barrett, E. ..	Healesville
533	,, of Lorne	3	Draught ..	Waddell, A. ..	Cann River
668	Master Brigham ..	A	Pony ..	Kiely, P. ..	Edi Upper
615	,, Dix ..	A	Thoro'bred	Larsen, P. T. ..	Eskdale
464	,, Value ..	A	Pony ..	Lang, A. ..	Winters Flat, Castlemaine
13	,, Wattee ..	A	Draught ..	Brock Bros. ..	Moe
580	Mauritius ..	A	Light ..	Zander, J. B. ..	King-st., Melbourne
492	Mazarron ..	A	Thoro'bred	Dwyer, E. W.	Bairnsdale
423	Mc Again ..	A	Draught ..	Pilgrim, H. E. ..	Kinimakatka
87	McLeish ..	A	,, ..	O'Callaghan, P.	Jack River
940	Medbourne Prince	A	,, ..	McNaughton, E.	Narraport
5	Menin	A	Thoro'bred	Dunne, J. ..	Euroa
979	Meredin	3	Draught ..	Boyd, H. ..	Avonmore
921	Merriment ..	4	Thoro'bred	Eichler, T. H. ..	Murrayville
727	Merry Chimes ..	5	Light ..	Gadsden, G. ..	Chillingollah
344	,, King ..	A	Pony ..	Maroney, W. F.	Wangaratta
466	,, Lad ..	6	Draught ..	Gertz, F. C. ..	Murtoa
795	Message ..	A	Light ..	Tack, A. J. ..	Korumburra
641	Mickey	6	Pony ..	Sanderson, H. ..	W. Warburton
1001	Mid-day ..	5	,, ..	Bannam, J. ..	Wallacedale
686	Middlemarch ..	A	Draught ..	Egan, M. J. ..	Charlton
291	Middlerigg Referee	6	,, ..	Lindner, C. ..	Murtoa
902	,, Renown	6	,, ..	Mitchell & O'Brien	c/o Campbell and Sons, Melbourne
640	,, What's Wanted	A	,, ..	McKay, E. ..	Wodonga
1006	Mikado	4	Thoro'bred	Turnbull, A. G.	Winnieburn North, Coleraine
162	Moira Lad ..	A	Draught ..	Cunnington, C. R.	Bamawm Extn.
975	Monach ..	5	Thoro'bred	Bell, J. ..	Mudgegonga
537	Mont Harold ..	5	Light ..	Curtis, W. ..	Glen Waverley P.O.
467	Montrae Bold ..	A	Draught ..	Don, E. ..	Newham
361	Montrose ..	4	,, ..	Small Bros. ..	Pt. Bag, Birchip

STALLION REGISTER, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
325	Moolap	A	Light ..	Mitchell, T. ..	Durham Lead
706	More Huon ..	A	,, ..	Fisk, H. E. ..	Leongatha
837	Morocco Chief ..	4	Draught ..	Arnold, A. ..	Werrigar E., Warrnambool
272	Morocco Lad ..	A	,, ..	Parish, Mrs. E. ..	Green Park, Horsham
431	Mountain Twig ..	4	Pony ..	Medlyn, J. H. ..	Medlyn, St. Arnaud
353	Move On ..	4	Light ..	James, R. J. ..	Walpeup
480	Moving Onward ..	6	,, ..	Mole, E. V. ..	Tutye
723	My Chimes ..	5	,, ..	Cromie, J. M.	Swan Hill
336	Napoleon ..	A	Draught ..	Lewis, S. J. ..	Maldon P.B.
124	Narahquong ..	A	Thoro'bred	Garner, H. ..	Benalla
929	Nether Craigends	3	Draught ..	Thornton, T. ..	Waaia
609	Newfield's Baron	A	,, ..	Coe Bros. ..	Coleraine
869	,, Pride	A	,, ..	Martin, J. M. ..	Aubrey Rd.
523	Newton Again ..	5	,, ..	Hodgson, H. ..	Lillimur
639	,, Banks ..	A	,, ..	Shaw, O. ..	Wooriwyrite, via Terang
12	,, Lad ..	A	,, ..	Skinner, T. N. ..	Bordertown, S.A.
154	,, Stewart	A	,, ..	Borgelt, A. H. ..	Nhill
416	,, Style ..	A	,, ..	Currell Bros. ..	Cowley's Creek
195	Newton's Best ..	A	,, ..	Oram, J. E. ..	Marnoo
104	,, Sensation	A	,, ..	Banko, R. ..	Simmies, Koyuga
345	Ngapar	A	Light ..	Allan, E. ..	Ondit
993	Noble Glen ..	5	Draught ..	Nagorcka, W. ..	Tarrington
43	Non Pariel ..	A	,, ..	Geddes, W. ..	Boomahnoomoonah
11	Nutshell ..	A	Pony ..	Whitehead, H. W.	Port Fairy
417	Nyallo Prince ..	A	Light ..	McAlpine, W. T. (junr.)	Hopetoun E.
608	Oakland's Pride ..	A	Draught ..	Tyers, A. H. ..	Nunga, via Ouyen
607	Oakwood ..	A	,, ..	Dorman, J. T. ..	Howlong, N.S.W.
468	,, Direct ..	A	Light ..	McCracken, A. ..	Bullarto S.
594	October ..	A	Thoro'bred	Hoysted, H. F. and F.	Wangaratta
951	Odd Pictures ..	3	Light ..	McAlpine, E. ..	Toolamba P.O.
255	Onward O. ..	A	Draught ..	Crozier, Jno. ..	Nathalia
955	,, Still ..	3	,, ..	Holden, D. E. ..	Yarroweyah
595	Operation ..	A	Light ..	Ley, Thos. (junr.)	Tallangatta
571	Orion	A	Thoro'bred	Cross, W. D. ..	Tangambalanga
596	Ormond Dale ..	A	Draught ..	Dixon, Wm. ..	Donald
872	Osiris	A	Light ..	Scarse, H. ..	Melton
86	Patrician ..	A	Draught ..	Gibbins, W. ..	Galah
489	,, Pride ..	A	,, ..	Egan, P. ..	Bealiba
836	Patrick Howard ..	3	,, ..	Holland, W. G. ..	c/o Mills P.B., Warracknabeal
755	Patrick's Pride ..	A	,, ..	Edwards, E. L. ..	Bacchus Marsh
597	Patriot	A	,, ..	Mibus, A. G. ..	Croxton East
10	Pearlyn ..	A	Light ..	Bowden, F. W. ..	Won Wron
575	Periscope ..	A	,, ..	Ervin, J. and M.	Pyramid
857	Peter	A	,, ..	Carrol, J. ..	Myrtleford
576	,, ...	A	Pony ..	Gibson, A. L. ..	Lismore
669	,, Eden ..	6	Draught ..	Dyer, J. ..	Benambra
175	Peterhof ..	A	Thoro'bred	Rowe, W. T. ..	Wallinduc
638	Pettadale ..	A	Draught ..	Ramsay, N. ..	Newbridge
246	Piper	A	Pony ..	Ford, Jas. ..	Wickliffe
654	Piratcer.. ..	A	Light ..	McArthur, D. ..	Victoria Valley
845	Pistol Son ..	A	Thoro'bred	Healey, F. B. ..	Kaniva
273	Pleasant Voyage ..	A	Light ..	Ohlin, W. ..	Gooramadda

Stallion Register, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
418	Plumlea ..	A	Light ..	Fischer, P. ..	Weiderman's L.B., via Jeparit
867	Poilu	A	Pony ..	Cross Bros. ..	Goroke
577	Preble	A	,, ..	McKenzie, A. F.	Hexham
720	Premier Dale ..	3	Draught ..	Penno Bros. ..	Boort P.B.
183	,, Jack ..	A	,, ..	Vaughan, V. ..	Condah
182	,, Montgomery of Willow Bank ..	A	,, ..	Doherty, E. ..	Congupna Road
805	Premier Success ..	5	,, ..	Fraser, W. ..	Hopetoun W.
408	,, Thomas	A	,, ..	Ryan, P. ..	Chinkapook
522	Pride	4	,, ..	King, J. W. ..	Lillimur
828	,, ...	A	Pony ..	Mitchell, F. ..	Walwa
578	,, of Lochiel ..	A	Draught ..	Ovens, J. T. ..	Cooma, via Byrneside
903	,, of Paisley ..	3	,, ..	Mitchell & O'Brien	c/o Campbell and Sons, Melbourne
579	,, of the Ponds	A	,, ..	Drayton, Ed. ..	Waurn Ponds
234	,, of the South	A	,, ..	Hill, H. G. ..	Nurrabil
176	Prince Alexander..	A	,, ..	Craig, J. ..	Winchelsea
329	,, Bellinda ..	A	Light ..	Lock, O. ..	Thorpdale
158	,, Bells ..	A	,, ..	Youren, R. ..	Natte Yallock, via Avoca
781	,, Bucklyvie	4	Draught ..	Pennel, G. W. ..	cr. New and Cole sts., Elsternwick
593	,, Charles ..	A	Pony ..	Dawkins, J. ..	Colac
935	,, Charming ..	A	Light ..	Allison, C. ..	Eaglevale, Talbotville
359	,, ,, ..	2	Draught ..	Allan, P. ..	Thalia, via Wycheproof
705	,, Coupar ..	A	,, ..	Cheesley, A. ..	Barnawartha
442	,, Douglas ..	A	Light ..	Martin, P. ..	Molesworth
257	,, Ecuador ..	A	Thoro'bred	Hender, F. ..	Broomfield
710	,, Gallant ..	3	Draught ..	Bodey, D. L. ..	Jung
474	,, Maurice ..	A	Light ..	Morrissey, O. V.	Molesworth P.O., via Yea
346	,, of Nullan ..	A	Draught ..	Quick, R. V. ..	Brim
809	,, Osterley ..	4	Light ..	Low, R. ..	91 Park-street, South Melbourne
591	,, Que ..	A	Pony ..	Callow, A. E. ..	520 Mair-st., Ballarat
982	,, Wigton ..	5	Draught ..	Archibald, J. ..	Raglan-street, Sale
818	Principal ..	A	Light ..	Emerson, H. R.	Clear Lake
592	Quality ..	A	Pony ..	Callow, A. E. ..	520 Mair-street, Ballarat
419	Quatta's Baron-Belmontonian ..	A	Draught ..	Carmody, R. F.	Everton
116	Quatta's Belmont	A	,, ..	Lindsay, W. ..	Baranduda
115	Radium ..	A	Light ..	Manifold and Co., Messrs.	Purrumbete, Weerite
722	Rangie Prince ..	3	Draught ..	Hallinan, J. M. ..	Kerang P.B.
161	Real Scotch ..	A	,, ..	Rumbold, J. ..	Laanecoorie
922	Red King ..	A	Light ..	Hollands, W. ..	Benambra
745	,, Lion ..	A	Pony ..	Whitehead, G. H.	Minhamite
9	Referee ..	A	Draught ..	Allan, E. ..	Ondit
33	Regis	A	,, ..	Manifold, E. ..	Wiridgil, Camperdown
32	Report	A	Light ..	Fraser & Sons, S.	Nyang, Moulamein, N.S.W.

STALLION REGISTER, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
31	Review	5	Draught ..	Donnan, J. ..	Watchupga
944	Rhymney H. ..	A	Pony ..	Roberts, Mrs. G.	Goroke
127	Rising Star ..	A	Draught ..	Hood, J. W. ..	Polkemmet P.O.
725	,, Sun ..	3	,, ..	O'Bree, J. ..	Bower Bank, Piangil
732	Robinhood ..	4	,, ..	Bull, T. ..	Ultima
540	Rosedale ..	4	,, ..	Müller, P. H. ..	Box 88, Dimboola
532	,, ..	3	,, ..	Liesfield, C. J. ..	Rainbow
181	Ribbon Wheel ..	A	Light ..	Vaughan, V. ..	Condah
437	Richard III. ..	A	Pony ..	Ruttle, A. ..	Inverloch
744	,, Cleve ..	A	Light ..	Shandley, H. H.	Kongwak
682	Right Dale ..	A	,, ..	Ovens, O. T. ..	Tatura P.B.
938	Rio Pronto ..	5	,, ..	Riedell, W. A. ..	Tongala
126	River Bells ..	A	,, ..	Doran, T. ..	Bennison
4	Rizzio (imp.) ..	A	Thoro'bred	Currie, H. Alan ..	Burrumbeet
469	Roala	6	Pony ..	Lyon, B. E. ..	Coleraine
687	Robert Alto ..	A	Light ..	Kennedy, A. ..	Tatura
292	Rocket	A	Pony ..	Thomson, A. W.	Hamilton
590	Ronyas Bells ..	A	,, ..	Harper, Mr. ..	Mgr., Savings Bank, Bacchus Marsh
847	Roseberry ..	A	Light ..	Woodmason, W.	Waverley-rd., Oakleigh
786	Rosneath Baronet	6	Draught ..	Wilkinson, W. G.	Yarrawonga
893	,, Cavalier	3	,, ..	,, ,,	,,
892	,, Donald	4	,, ..	Creighton, A. ..	Tungamah
884	,, Footprint	4	,, ..	Jamieson & Sons, H.	Nth. Burrajaa, via Corowa
606	Roseworthy ..	A	Light ..	Clifford, A. ..	Banyena
737	Rothschild Junior	A	,, ..	Daley, P. (junr.)	Nanguo P.O., N.S.W.
515	Royal	4	Draught ..	May, Jas. ..	Joel Joel, via Stawell
750	,, Belmont ..	A	,, ..	Egan, J. M. ..	Woodleigh
92	,, Ben ..	A	,, ..	Hamilton, J. M.	Inverleigh
180	,, Bute ..	5	,, ..	Luckie, G. ..	Springhurst
150	,, Charm ..	6	,, ..	Smith, T. H. ..	Lalbert
740	,, Chief ..	6	,, ..	Burns, W. G. ..	Lemon Springs, Goroke
817	,, Churchill ..	A	,, ..	Kennedy, A. ..	Tatura
360	,, Colours ..	6	,, ..	Grant, J. F. ..	Carina
8	,, Comedy ..	A	Thoro'bred	Sutherland, A. ..	Welshpool
519	,, Craig ..	2	Draught ..	Allen, J. S. P. ..	Broughton, via Nhill
218	,, ,, ..	A	,, ..	Trimble, H. ..	Pine Lodge
470	,, Dandy ..	A	Pony ..	Waiting, C. ..	Cohuna
978	,, Derby ..	3	Draught ..	Siden, T. ..	Tatura
753	,, Douglas ..	A	,, ..	Dugdale, Jno. ..	Myrniong
38	,, Duke ..	A	,, ..	Exors. late C. W. Dennert	Hamilton
328	,, Fashion ..	A	,, ..	Shaw, F. ..	Wycheproof
823	,, ,, ..	A	,, ..	Toogood, J. ..	Hawkesdale
263	,, Flush ..	A	,, ..	Coton, M. ..	Terang
835	,, Gartley II.	3	,, ..	Sleep, S. ..	Warracknabeal
500	,, Lad ..	A	,, ..	Spedding, E. C. R.	Bealiba P.O.
544	,, Mac ..	A	Light ..	Charity Bros. ..	Serpentine
105	,, Main ..	6	Draught ..	Greig, D. C. ..	c/o Adamson, Strettle, Melbourne
611	,, McGregor ..	A	,, ..	Vallance Bros. ..	Nullawil
545	,, Mint ..	A	Light ..	Harper, L. A. ..	Bacchus Marsh

STALLION REGISTER, 1925–26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
831	Royal Prince ..	A	Draught ..	Goudie, G. G. ..	Ultima
488	,, Robin ..	A	,, ..	Fitzpatrick, M. ..	Barrakee
60	.. ,, ..	A	,, ..	Boyle, J. ..	Verdant Vale, via Boort
487	,, Salute ..	A	,, ..	Bright, A. ..	Woorayl
787	,, Saxon ..	A	,, ..	Beaumont, G. H.	Tatura
754	,, Seal ..	6	,, ..	Dugdale, J. ..	Myrniong
125	,, Shepherd ..	A	,, ..	Heard, T. A. ..	Noradjuha
728	,, Simon ..	5	,, ..	Bland, P. ..	Narracoorte, S.A.
319	.. ,, ..	5	,, ..	Cox, A. E. ..	Alma P.O., near Maryborough
986	,, Stirling ..	5	,, ..	Murphy Geo. ..	Kerang
634	,, Style ..	A	,, ..	Morrissey, P. ..	Molesworth
54	,, Success ..	A	,, ..	Elsom, W. ..	Dart Dart
721	,, Viceroy	3	,, ..	Buchanan, G. ..	Box 62, Boort
864	Royalty ..	A	Pony ..	Coe, W. ..	Coleraine
834	Rufus	5	Draught ..	Kent, Mrs. S. E.	Sheep Hills P.B.
610	R. W. Estell ..	A	Light ..	Anderson, Geo. ..	Trawalla P.O.
219	Safe Voyage ..	A	,, ..	Meyers, V. ..	Lockwood
912	Sailor Voyage ..	A	,, ..	Saunders, Mrs. H. A.	Albury, N.S.W.
904	Sailor's Knot ..	4	Draught ..	Fraser, W. C. ..	Yerong Creek, N.S.W.
729	Salvation ..	2	,, ..	Purves, P. B. ..	Noonameena, Tol Tol, Mallee
521	Sam Dillon ..	3	Light ..	Higgins, T. E. ..	Cydesdale
552	,, Huon ..	A	,, ..	O'Brien, J. P. ..	110 Powlett-street, East Melbourne
64	Sandy's Fashion ..	6	Draught ..	Haines, E. ..	Gerang Gerung
426	Sanquhar ..	3	,, ..	Brownless, W. H.	Jerilderie, N.S.W.
767	Santrel	A	Light ..	Storey, R. W. ..	Murchison East
471	Satellite Junior ..	A	Pony ..	Saunder Bros. ..	Tungamah
220	Satellite's Pride ..	A	Light ..	Berry, R. ..	Emu P.O.
42	Saturn	A	Pony ..	Daniel, W. E. ..	Nagambie
913	Scotch Laddie ..	4	Draught ..	Carton, L. ..	Laceby South
567	Scotchie ..	4	,, ..	Broom, A. ..	Eastville, via Maldon
784	Scotch Mixture ..	3	,, ..	Sanders, S. D. ..	Brentwood
933	,, Prince ..	4	,, ..	Evans Bros. ..	Redcamp, Moyhu
501	,, Thistle ..	4	,, ..	Bagnell, J. ..	Mologa
919	Scotland Again ..	4	,, ..	Witherow, T. J.	Wangaratta Sth.
293	Scotland's Bloom	A	,, ..	Rodgers, I. R. ..	Tooan, via Natimuk
905	,, Gem ..	3	,, ..	Mitchell & O'Brien	c/o Campbell and Sons, Melbourne
351	,, Pride	2	,, ..	Nairn, J. ..	Box 44, Ouyen
637	,, Signet	A	,, ..	Ramsay, N. ..	Newbridge
486	,, Viceroy	A	,, ..	Parker, T. ..	Pepper's Plains
741	,, Viceroy's First	6	,, ..	Witney, W. J. ..	Aubrey, via Wairracknabeal
310	,, Victory	5	,, ..	Peucker, —. ..	Sea Lake
621	Scottie ..	A	,, ..	Fullam, T. (junr.)	Torrumbarry P.O.
936	Scottish Chief ..	3	,, ..	Bourke, J. ..	Edi
906	,, King ..	3	,, ..	Hamilton, A. L. (junr.)	Corryong
210	,, Laird ..	6	,, ..	Edson, T. ..	Glenorchy
294	,, Peer ..	A	,, ..	Foubister, D. ..	Minyip
157	,, Prince ..	A	,, ..	Buckley, R. D. ..	Glenlea, via Gerang

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Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
985	Scottish Viceroy	4	Draught ..	Hehr Bros. ..	Woollert
726	Scotty	3	,, ..	Stehn, F. A. ..	Natimuk
145	,, ...	A	,, ..	Roulston, J. ..	Muskerry E.
846	,, Chief ..	A	,, ..	Healey, F. B. ..	Kaniva
3	Scisylt Sensation .	6	Pony ..	Drake, Mrs. C. ..	Upper Beaconsfield
832	Seldom	A	Light ..	Greig, J. ..	Antwerp
91	Selection ..	A	Draught ..	Watson, C. ..	Glen Forbes
232	Selkirk	A	Light ..	Scott, A. ..	Elmore
57	Several	A	Thoro'bred	Winter-Cooke, S.	Hamilton
472	Shandon Bells ..	A	Light ..	Long, T. ..	Nhill
988	Shantella ..	5	Draught ..	Poulston, D. H.	Myola, via Toolcen
810	Shanter's Pride ..	A	,, ..	Bridgett, W. ..	Charlton
815	,, ,, ..	A	Pony ..	McIntosh, J. ..	Gerang Gerung
920	Shellille ..	3	Light ..	Stanislaus, H. L.	Walpeup
883	Shepherd King ..	3	Draught ..	Skehan, W. ..	Corowa
156	Shepherd's Boy ..	A	,, ..	Kelly, I. ..	Korong Vale
37	Sheriff Huon ..	A	Light ..	Thomas, V. ..	Police Station, East Melbourne
739	Shetland Laddie ..	6	Pony ..	Irvine, W. B. ..	Nicholson
770	Shilinga ..	A	Light ..	McLennan, D. ..	Derrinallum
30	Siam	A	,, ..	Cahill, J. J. ..	Koyuga
858	Silver Bells ..	A	,, ..	Coonertz, T ..	Yarragon
189	,, King ..	A	,, ..	Nulty, J. J. ..	Walpeup
438	Silverlight ..	A	Pony ..	Jarvis, R. J. ..	Gudgewa
372	Sir Andrew ..	4	Draught ..	Mitchell, W. (junr.)	Watchupga
439	,, Angle ..	A	Light ..	Cadman, L. S. ..	Corryong
322	,, Barney Burnside	3	Draught ..	Schroeder, F. H.	Carma P.O.
622	,, Burnhead ..	A	,, ..	Boyd Bros. ..	Minhamite
333	,, Clyde ..	A	,, ..	Taylor, S. J. ..	Lake Boga
95	,, Dale	A	,, ..	Sands, A. ..	Sea Lake
155	,, Don Pedro ..	A	,, ..	McKee, J. ..	Clarendon P.O
274	,, Douglas Haig	A	,, ..	Lincoln, J. ..	Portarlington
327	,, Everest ..	A	,, ..	Ralston, A. ..	Lucknow P.O.
276	,, Fabric ..	A	,, ..	Allitt Bros. ..	Diapur
928	,, Frederick ..	3	,, ..	Thornton, T. ..	Waaia
409	,, Garnet ..	A	Pony ..	Kennedy, R. ..	Bass
233	,, George ..	A	,, ..	Russell, J. K. ..	Barunah Plains, Hesse
688	,, ,, ..	A	Draught ..	Griffiths, E. J. ..	Tongala
440	,, Harold ..	A	Pony ..	Adams, G. ..	Shepparton P.O.
939	,, Major George	3	Draught ..	Bail, E. J. W. ..	Koyuga
441	,, Lowlander ..	A	,, ..	Jolly, F. H. ..	Gerang Gerung
244	,, Mac ..	A	,, ..	Blake, Wm. ..	Rushworth
481	,, Regulus ..	A	,, ..	Clark, W. J. ..	Sunbury
689	,, Roderick ..	A	,, ..	Byrne, W. ..	Trentham
211	,, Rupert ..	6	,, ..	Kelly, Geo. ..	c/o Mailman, Rochester
659	,, Thomas ..	A	,, ..	Lyon, W. H. ..	The Grange, Sale
311	,, Walter Burnside	5	,, ..	Schroeder, F. ..	Caringa P.O.
76	,, Wilfred ..	A	,, ..	Burn, H. N. ..	St. Arnaud
868	,, William ..	A	,, ..	McQueen Bros. ..	Waubra
187	Snowdrop ..	6	Light ..	Staughton, A. J.	Terang
290	Southern Lad ..	A	Draught ..	McKenzie, G. ..	Pullut
114	,, Star	A	,, ..	Maher, J. ..	Nyrraby, via Chillingollah
495	Southerton ..	A	Light ..	Kilcullin, J. ..	Sea Lake

STALLION REGISTER, 1925-26—*continued.*

Cert. No.	Name.	Age.	Class.	Owner.	Address.
		Yrs.			
816	Sportsman's Hero	A	Draught ..	Kennedy, A. ..	Arcadia
59	Springbank Laurence ..	A	,, ..	Crawford, W. H.	Hamilton
177	Squib	A	Pony ..	Robertson, A. ..	Koria, via Wallaura
709	Squire Dale ..	3	Draught ..	Greenslade, S. ..	Yorks Peninsula, S.A.
670	St. Mark ..	A	Draught ..	George, C. W. ..	Heather Bank, Beulah
690	Standard ..	A	,, ..	Scott, J. G. ..	Hopetoun
962	Stanhope Pride ..	2	,, ..	Hamilton, J. ..	Box 19, Stanhope
113	Stanley May ..	A	,, ..	Ladson, G. R. ..	Mincha W.
947	Stare	A	Thoro'bred	Scott, L. W. ..	Parwan
29	Starlight ..	A	Pony ..	Giles, J. ..	Bairnsdale
623	,, ..	A	Draught ..	Spriggs, S. H. ..	c/o J. Fuller, Mitre P.O.
949	Steel Blade ..	4	Pony ..	Nimmo, J. ..	Galah
331	Stirling Prince ..	A	Draught ..	Cumming, R. A.	Beauchamp, Mystic Park
139	Stockman's Lad ..	A	,, ..	Schulz, J. F. A.	Jeparit
335	St. Simon ..	A	,, ..	Butler, G. J. ..	Carisbrook
98	Straightaway ..	A	Light ..	Allen, T. ..	Narrewillock, via Glenloth
479	Strathvale ..	6	Pony ..	Griffin, V. R. ..	Underbool
478	Style, O. ..	A	Light ..	Barry, W. ..	Heathcote
967	Stylish Mac. ..	4	Draught ..	Phillips, J. M. ..	Congupna Rd.
953	Sudbourne's Chief	4	,, ..	Stray, G. H. ..	Tabilk
871	Sudbourn's Victory	A	,, ..	Head, A. C. ..	Seymour
375	Suggestion (imp.)	A	Thoro'bred	Heath, A. T. ..	Hopetoun
318	Sum Time ..	5	Draught ..	Thomas, J. H. ..	Yatpool P.O.
410	Sunbeam ..	A	Thoro'bred	Treasure, H. L.	Castleburn, Stratford
473	Sunbury ..	A	Light ..	Nolan, T. C. ..	Carinya, Tarrawingee
679	Sunny Simon ..	A	,, ..	Swan, A. R. ..	Avenel
395	Sun Star ..	A	Pony ..	Unwin, J. T. ..	Spring Vale
309	Surprise ..	3	Draught ..	Alday, L. ..	Lascelles

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Pomologist.

The Orchard.

If the work has not already been done, the orchard should be kept in constant cultivation so as to conserve the abundant spring rains. Should the summer become hot and dry, this will be a very necessary precaution. Even where the soil had been previously well cultivated,

the cultivators should again be run over the surface, as any hot weather will cause the soil to crust, which would be the means of dissipating a very considerable amount of soil water. Every effort should be taken to retain this moisture so that the fruit crops shall have all they require for their perfection. To further attain this end no weeds should be allowed to grow in orchard soils.

BUDDING.

Young trees, or old trees that have been previously cut down in preparation for budding, may be worked towards the end of the month. It is advisable to select dull, cool weather for this operation, so that the sap may run more freely, and that atmospheric conditions may not have too drying an effect on the bud. The operation of budding is a very simple one, and is easily performed. To gain a successful end, the sap should be flowing freely, so that when the cuts are made the bark should "lift" or "run" easily, and without any clinging or tearing of the fibres, and it should separate freely from the wood. The bud selected should be firm and well matured, and should show no signs of premature growth whatever. It should be cut from the scion with a shallow cut, and if any wood be left in the cutting it should be taken out of the bud. A smooth, clean spot should be selected on the bark of the stock, and a T-shaped cut made, the vertical cut being longer than the horizontal one. The bark at the point where the cuts meet should be raised, and the bud inserted between the bark and the wood of the stock. The bud should be gently pressed down into position, and then bound with soft twine, string, or raffia. If the bud be too long for the cut, the top may be cut off level by means of a horizontal cut. With practice it will soon become possible to take the buds so that they will need neither cutting nor trimming.

After two or three weeks the buds should be examined to see if they have "taken"—that is, if the bud has united thoroughly to the stock. When this occurs, the tie may be cut. If a growth be desired at once all wood above the bud may be cut off some short distance above the bud, so as to prevent any bark splitting, and consequent loss of the bud, and so as to throw the bud out at a fair angle. Ultimately this should be properly trimmed.

If desired, the bud may be left dormant throughout the autumn and winter till spring. In this case the branch should not be cut off, but left on till the usual winter pruning.

SUMMER PRUNING.

Care should be observed that as much of the leafage as possible is retained on the tree. Unduly long laterals of fruiting trees may be shortened back, always cutting to a leaf. Unnecessary terminal leader growths, of which there are sometimes three or four, all strong growing, may be reduced to one, retaining this one as a leader. In no case should this growth be cut or interfered with in any way.

The results of these cuts will be to divert the sap which was flowing into growths that would subsequently be pruned, into more profitable channels, so that weak buds and growths may be strengthened, and induced into fruit bearing.

The Vegetable Garden

The work in this section is much the same as in the flower garden. Good mulching and regular soil stirring will be the work for the month. As soon as any bed is cleared of vegetables it should be manured and well dug over in preparation for the next crop. Deep digging is always desirable in vegetable growing. If any pest, such as aphis, pea mite caterpillars, or tomato weevil, have been present, it would be advisable to burn all the crop refuse, or to destroy any insects that remain, and to give the plot a dressing of gypsum, or of Clift's manurial insecticide.

Keep the tomatoes well watered and manured, pinching out surplus and strong grown laterals. In early districts the onion crop will be ripening. In late districts, or with late crops, the ripening may be hastened by breaking down the top. An autumn crop of potatoes may be planted. Cabbage, cauliflower, lettuce, and celery plants may be planted out. Keep asparagus and rhubarb beds well watered.

The Flower Garden.

January should be a busy month in the garden. It may be necessary to water frequently, and after every watering the surface should be well loosened, and stirred with the hoe to keep it moist and cool. More cultivation and less water is a good rule to be observed. The hoe should be used more, and the hose less, in summer; greater benefits will accrue, and the water bill will be considerably reduced. Mulchings with straw, grass, &c., are very useful just now. The mowings from lawns form valuable mulching. Waste tobacco stems are also valuable as a mulch.

Dahlias, chrysanthemums, gladioli and other tall-growing, slender herbaceous plants will require support in the way of stakes. They will also need mulching considerably. These plants should receive no check whatever, and should be continued with a regular even growth right through the season. Another desideratum is that soils should be well drained, as plants of all descriptions thrive better in well-drained soils.

A sharp look-out should be kept on these plants for attacks of red spider. If this insect appears, a good spraying of tobacco solution or benzole emulsion should be given.

Constant watch will need to be kept for the various small caterpillars that attack the buds of these plants. Spraying with a weak solution of paris green and lime, or similar insecticide, will be useful. Hand-picking should also be resorted to.

REMINDERS FOR FEBRUARY.

LIVE STOCK.

HORSES: *At grass.*—Supplement dry grass, if possible, with some greenstuff. Provide plenty of pure water and shade shelter. *In stable.*—Supplement hard feed with some greenstuff, carrots, or the like, and give a bran mash once a week

at least. Avoid over-stimulating foods, such as maize and barley. Give hard feed in quantities only consistent with work to be performed. Stable should be well ventilated, and kept clean. When at work, give water at short intervals. Always water before feeding. Great benefit will result in supplying horses—more especially young ones running at grass—with a lick. The following one is recommended:—

Salt	20 parts
Lime	20 parts
Superphosphate	10 parts
Sulphate of iron	5 parts.

By having troughs constructed that will protect the lick from rain a considerable saving will be made.

Horses at grass require their feet attended to at frequent intervals, otherwise deformity of feet and lameness may result.

CATTLE.—Provide succulent feed and plenty of clean water easy of access; also shade and salt lick in trough. Have each cow's milk weighed and tested for butter fat regularly. Rear heifer calves from those that show profitable results. Give milk at blood heat to calves. Keep utensils clean or diarrhœa will result. Do not give too much at a meal for the same reason. Give half-a-cup of limewater per calf per day in the milk. Let them have a good grass run or lucerne, or half-a-pound of crushed oats in a trough. Dehorn all dairy calves except those required for stud or show purposes. Keep bulls away from cows. Write for Bulletin 52.

PIGS.—Sows about to farrow should be supplied with short bedding in well-ventilated styes. All pigs should be provided with shade and water to wallow in. There will be plenty of cheap feed available now, and there is a good margin between cost of feed and price for fat pigs. Read *Bulletin* No. 16.

SHEEP.—Ewes with a predominance of British blood do not come regularly into season until the present month. This is particularly the case in Gippsland and South-Western Victoria, if these strong-woolled ewes were bred in the cool wet districts. Most of the pure-bred ewes of British origin very seldom take the ram until February, March, or even as late as April, with the possible exception of studs bred in the north, or recently imported.

Lambs dropped in July, August and September, may suit certain districts in the south, but early lambs are most profitable in normal years north of the Divide. To breed out this late-lambing tendency, and to procure quality and quantity of wool as well as a good framed sheep, use well-bred and well-woolled large-framed Merino rams on all strong-woolled cross-bred ewes. If the right type of Merino ram is not obtainable at reasonable rates, secure good Corriedales or Comebacks. Narrow hard-looking rams are usually active workers, and in a flock of ewes with other rams, they often get the greatest number of lambs. If any such rams are of necessity to be used, keep them back for a few weeks, and join later with the flock after the best of the rams have been running with the ewes for at least three weeks.

The second dipping of sheep affected with tick or louse can be undertaken this month. A good water supply is vital. Provision should be made for prevention against fire and losses by disease or drought.

POULTRY.—Chickens should now be trained to perch; they will be more healthy.

Provide plenty of green feed and give less grain and meat. Avoid condiments. Keep water in cool shady spot and renew three times each day. Keep dust bath damp.

CULTIVATION.

FARM.—See that haystacks are weatherproof. Summer fallow and prepare land for winter fodder crops. Get tobacco sheds ready for crop. In districts where February rains are good, sow rye, barley, vetches, and oats for early winter feed.

ORCHARD.—Spray for codlin moth. Search out and destroy all larvæ. Cultivate the surface where necessary and irrigate where necessary, paying particular attention to young trees. Fumigate evergreen trees for scale. Continue budding.

FLOWER GARDEN.—Cultivate the surface and water thoroughly during hot weather. Summer-prune roses by thinning out the weak wood and cutting back lightly the strong shoots. Thin out and disbud dahlias and chrysanthemums. Layer carnations. Plant a few bulbs for early blooms. Sow seeds of perennial and hardy annual plants.

VEGETABLE GARDEN.—Continue to plant out seedlings from the seed-beds. Sow seeds of cabbage, lettuce, cauliflower, peas, turnips, and French beans. Keep all vacant plots well dug.

VINEYARD.—February is the best month for the "yema," or summer bud graft (see *Bulletin* No. 35, available on application). Select and mark the best-bearing vines of varieties from which scions will be required for next spring's grafting.

Given suitable climatic conditions, downy mildew will make its appearance. If vines were not sprayed in January they should be sprayed this month. The final spray (January or February) is most important for the protection of the foliage, thus insuring the ripening of the fruit and well-nourished wood, without which a good crop cannot be expected next year. Sulphur again, if oidium is prevalent, but avoid sulphuring wine grapes too short a time before gathering. The sulphur may be mixed with Bordeaux mixture, thus enabling the two diseases, oidium and downy mildew, to be combated simultaneously.

Cellars.—Prepare all plant and casks for the coming vintage. An ounce of bisulphite of potash, or a couple of fluid ounces of bisulphite of soda solution, to each bucket of water used to swell press platforms, tubs, &c., will help to keep it sweet. Keep cellars as cool as possible. Complete all manipulations so as to avoid handling older wines during vintage.

In the case of very hot weather occurring during vintage, attention is directed to the new wine-making method by "Preliminary Maceration," described in a pamphlet obtainable on application.

PRODUCTION OF COW'S MILK WITH ANTIRACHITIC PROPERTIES.

Certain French investigations in this relation (Lesne and Vagliano—*Comptes Rendus hebdomadaires des seances de l'Académie de Science*, Vol. 179, No. 11) are the subject of notice in a recent issue of the *Scottish Journal of Agriculture.*

It is well known, says the journal, that the milk of certain animals lacks antirachitic properties, and the authors carried out experiments with a view to remedying this by a modification of the cow's food, an extract of 500 gm. of cod-liver oil being added to the animal's daily ration. The food was well assimilated, and the general health of the cow improved, while the milk produced did not diminish in quality nor show any difference in smell, colour, or taste. The butter was of lighter colour, but was satisfactory in taste, and there was no difference in the quantity of butter-fat produced.

The results of investigations (including feeding experiments with rats) showed that milk from cows whose rations included a considerable quantity of cod-liver oil produced a quality of butter richly supplied with glycero-phosphates (lecithin) and with growth-vitamins. Milk thus produced has both a curative and a preventive action on rachitis.

RAPE The Food for Sheep

SOW NOW FOR QUICK GREEN FEED

RAPE is a profitable Winter crop, and is valuable for pasturing sheep during the Winter months.

A Great Fattening Food for Horses, Cows, Sheep, Pigs, &c.

Sow now, it will catch the Autumn rains, and will be ready for pasturing in about 10 weeks. A crop is thus available for stocking before the Winter sets in.

Somner's "Tip-Top" Giant Kangaroo Rape

A sturdy and rapid grower; it has a strong tap-root, enabling it to stand long periods of drought. Stalks break easily, and are very succulent right through. **Will not taint the milk.** Sow 4 to 6 lbs. per acre in drills; 8 to 12 lbs. broadcast. **Will fatten 3 more sheep per acre than any other kind.**

Dwarf Essex

Imported English (true). Dutch. New Zealand. (From imported English Seed.) Finest quality. Grown from pure stock.

White Mustard

Prevents Blowing in Sheep. 1 lb. per acre with Rape.

Egyptian or Berseem Clover

"Misskawi" Brand (imported direct), specially re-machine cleaned

A Great Winter Fodder

Recommended as an annual Winter Clover for warm countries where irrigation is practised. Valuable for its green or dried fodder, and as a winter soiling crop for orchards, vineyards, &c., on irrigated land. A strong-growing annual, with succulent, fleshy stems and broad, soft leaves. The flowers are cream or pale yellow in colour, and are clustered together in a compact, cylindrical spike.

The first cut is available from 45 to 60 days after sowing, followed by a second and third cut, and sometimes a fourth, although the latter is never heavy, and is usually reserved for seed. All kinds of stock eat it readily, and it may be given to them at any stage of growth; it does not taint milk in the slightest degree. This Clover will re-seed itself in a pasture on good land, and thus becomes practically permanent.

Fallow must be thoroughly clean prior to seeding. Sow through the drill, but care should be taken to see that the points of the drill are kept just on the surface of the ground.

Graze lightly, or cut when plants are a few inches high. They will then stool out well. **Sow 8 to 12 lbs. per acre in drills, or 20 to 30 lbs. broadcast.**

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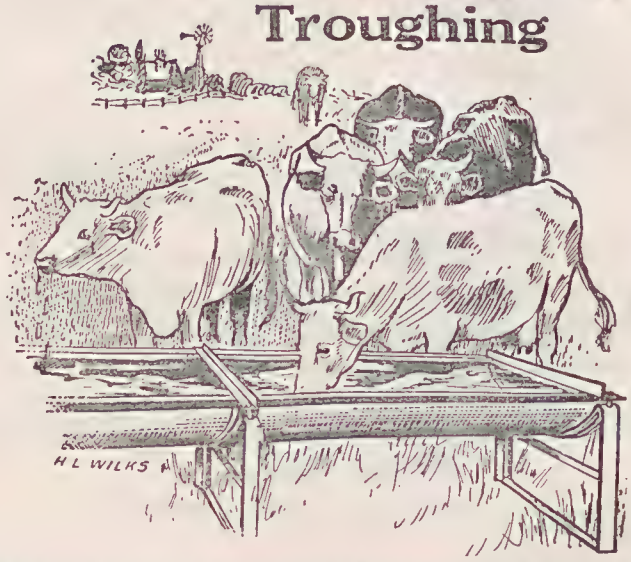

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are sound in construction. Everything which enters into their manufacture is of Australia's best—they are rain and dust proof, weather influences cannot affect the working parts, and, with its unsurpassed oiling system, friction and wear and tear is practically nil. The enclosed-gear "BILLABONG" is undoubtedly a very superior Windmill. *Particulars and Prices Post Free.*

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(Signed) OTWAY R. FALKINER,
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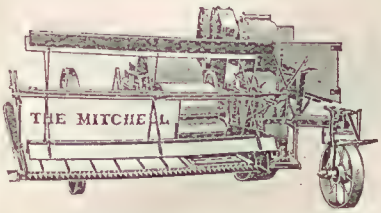

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The well-known Wimmera farmer, Mr. J. H. Reichelt, of Lorquon, says :—

"As for down crop, thistles, or other weeds, your machine will deal with anything."

Mr. R. J. Beggs, Kellalac, says :—

"What made me buy a 'MITCHELL' was because my crop was infested with musk. This is where the 'MITCHELL' stands out compared with other machines. I have had great experience with musk in crops, and the way the 'MITCHELL' handled it and did her work was a pleasant surprise to me, and I gave her a thorough test in it."

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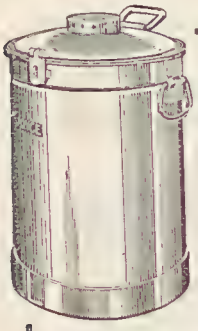

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50 ,, ...	35/-		

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A complete cooler consists of cooler, strainer, vat and tap, galvanized brackets, unions and hose.

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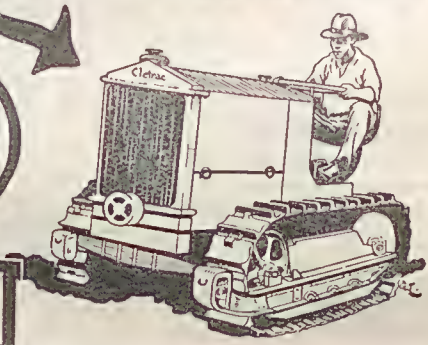

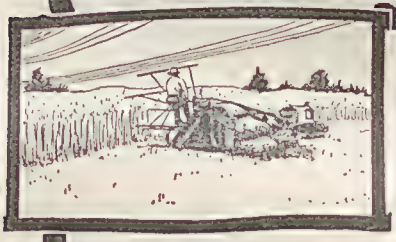

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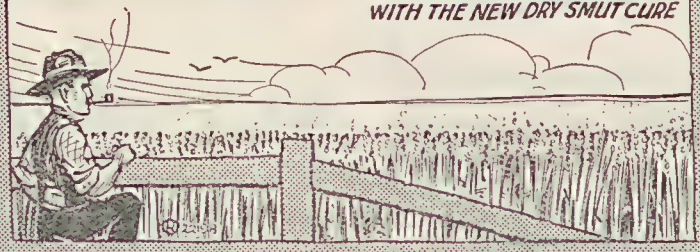

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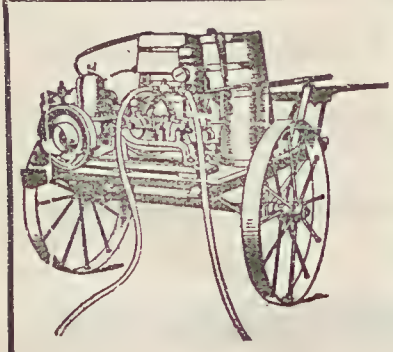

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The Stores have a capacity of **743,980 cubic feet insulated,** and are capable of holding **372,000 boxes of butter,** or **248,000 cases of fruit, or 335,000 carcasses of lamb and mutton.**

Electric motor power totals 900 H.P.

Produce can be placed on conveyors at any point and mechanically carried to any chamber in the building, or conveyed from the chambers direct into the ship's hold.

The Railway Department Goods Sheds are adjacent to and connected with the Cool Stores by direct lines; delay and exposure of produce through shunting in the Spencer-street yards, or cartage, are thus avoided. The Stores are situated in close proximity to the Victoria Dock, where vessels drawing up to 30 feet of water can be berthed; excellent facilities for the efficient and economical treatment and shipment of frozen and perishable products are provided.

Expert Officers are connected with every Branch, so that any one requiring information regarding the production, preparation, and shipment of produce can rely upon being promptly supplied with up-to-date information upon all matters.

DEPARTMENT OF AGRICULTURE

GOVERNMENT COOL STORES

VICTORIA DOCK

Facilities are provided for producers and smaller exporters of the various kinds of produce, so that direct shipments on their own account may be undertaken. The Government ownership and conduct of Cool Stores places producers in an independent position, and, in addition, preserves an open channel for the carrying on of the export trade in perishable products.

The Department of Agriculture will receive, handle, freeze, store, and ship **Butter, Cheese, Eggs, Fruit, Meat, Poultry, Rabbits and Hares, &c.,** for producers and exporters.

Produce to the value of over **£30,000,000** has been treated at the **Government Cool Stores.**

GOVERNMENT COOL STORES, VICTORIA DOCK (Dudley St.)

Telephones:

Office: 10383 Central. **Superintendent and Engineer-in-Charge. 10382 Central.**

SCALE OF CHARGES, ETC.

and further particulars may be obtained upon application to the

EXPORTS SUPERINTENDENT, DEPARTMENT OF AGRICULTURE, PRODUCE OFFICES, 605-7 FLINDERS STREET, MELBOURNE.

Telephone 9380 Central.

SILOS DESIGNED & BUILT

"Papec" Cutter & Blower

Fastest Silo Filler

R10 Model, £85 complete

A "Louden" is the ideal Farm Barn—It pays for itself.

JAMES T. KNOX, Leongatha

Melbourne Office, 516 Collins St., Melbourne.

Write for booklet on Farm Buildings and Silos.

DEPARTMENT OF AGRICULTURE

POULTRY FOR SETTLERS

Orders for Cockerels for delivery from March may now be booked from the Poultry Pens at the Central Research Farm, Werribee
Settings of Eggs can be supplied in season
1st July to 1st October orders are booked in rotation

WHITE LEGHORNS

No. 1—Pure Cosh World's Record Strain.

„ 2—From Single Tested Hens with scores of 260 to 285 eggs, Single Mated to Cocks bred from Hens with scores of 275 to 301 eggs.

UTILITY BLACK ORPINGTONS

(Founded on Christie and Cullen Strains)

No. 1—From Single Tested Hens with scores of 256 to 284 mated to Cockerels bred from Hens with scores of 272 to 313 eggs.

„ 2—From Hens bred from above mated to Cockerels bred from Single Matings.

RHODE ISLAND REDS

Pure Dalrymple

From Hens with scores of 250 to 275 eggs, mated to Cockerels bred from Hens with scores of 264 to 292 eggs in 12 months.

For prices and particulars apply to The Manager, Research Farm, Werribee

This Journal

offers exceptional advantages

for Advertising

Circulates throughout the **Country Districts of Victoria** and amongst **Farmers of the Commonwealth**, reaching also country professional men, tradesmen, schoolmasters, teachers, and the like.

Exceptionally satisfactory results have followed the advertising of Stud Stock in this Journal.

Rates on application to the Official Canvasser

Mrs. Hemming, 38 Seymour Avenue, Malvern

YATES RELIABLE SEEDS
FOR 1926

AS the the new year opens, the attention of every thoughtful farmer is centred on the planning of the New Year's work. Autumn is such an important time in the majority of districts and early preparation so essential, that much of the work should now be in hand for the laying down of such lines as :—

PASTURE GRASSES **OATS**
LUCERNE **BARLEY**
SUBTERRANEAN AND ALL OTHER CLOVERS

SOWINGS SHOULD BE MADE DURING FEBRUARY AND MARCH

Our Autumn Farm Seed List will be published in the early autumn, and will be at once posted to all regular customers. Any others interested will be placed on our mailing list on receipt of a post card giving their name and address.

SEED SUPPLIES

With regard to Seed Supplies, those of our readers who have dealt with us in the past know that Yates' Reliable Seeds give the cleanest, heaviest, and surest crops, they know that our Seeds give them far greater value for money than "cheap" seeds, and that the slight extra cost of Yates' Recleaned and Tested Farm Seeds is more than repaid by their undoubted superiority in quality, growth, and strain. For 1926 we shall exercise the same scrupulous care in the selection, testing, and recleaning of Yates' Reliable Seeds that has made them the choice of the leading agriculturists all over the Commonwealth.

We thank all our customers for their support last season, and we wish them a bright and prosperous New Year 1926.

SINCE 1826

ARTHUR YATES & Co. Ltd.

Letters Box 2707C G.P.O.

Australia's Greatest Seed House,
184 SUSSEX ST., SYDNEY

Wires "SEEDSMAN," SYDNEY

By Authority: H. J. GREEN, Government Printer, Melbourne.

DEPARTMENT OF AGRICULTURE, VICTORIA

Red Poll Dairy Herd

The Department has now completed the orders for calves that were booked ahead of calving when the advertisement was withdrawn; consequently the booking of orders for bull calves from the forthcoming calvings has now been resumed.

BULL CALVES are sold for delivery at a month old at prices based approximately on the actual milk and butter fat record of the dam at the rate of 1s. per lb. of butter *fat* yielded. Thus a calf from a cow with a 400 lb. butter fat record is sold for 20 guineas, one from a 300 lb. butter fat cow for 15 guineas, and so on. Bull Calves *ex* heifers on their first calf are sold for a set price of 10 guineas.

(For Record of Yields of dams see Red Poll Herd Book.)

SIRES IN USE:

VICTORIA VOLCANO (322 A.)

Sire: Nicotine (69 A.A.) by Acton Dewstone (imp.) 9524 (4 A.A.).
Dam: Tonga (253 A.) by Honingham Archbishop (imp.) 9702 (48 A.A.).

Tonga's butter fat yields for 6 successive lactation periods are as follow:—1916, 341 lb.; 1917, 398 lb.; 1918, 419 lb.; 1919, 479 lb.; 1920, 428 lb.; 1921, 562 lb.

BELLIGERENT (Imported) 11096 (8 A.A.)

Dam's Record (1st milking) 7144 lb. milk.						
Dam's Dam's	,,	14533 lb. milk	...	4 years average	12871 lb. milk.	
Sire's Dam's	,,	10370 ,,	...	7 ,, ,,	9354 ,,	
Sire's D. Dam's	,,	9510 ,,	...	12 ,, ,,	8033 ,,	
G. Sire's D. Dam's	,,	10215 ,,	...	7 ,, ,,	9386 ,,	
G.G. Sire's D. Dam's	,,	12565 ,,	...	10 ,, ,,	8853 ,,	
G.G.G. Sire's D. Dam's	,,	10088 ,,	...	2 ,, ,,	9754 ,,	

BIT O' 'BACCA (Vol. 3)

Sire: Nicotine (69 A.A.) by Acton Dewstone (imp.) 9524 (4 A.A.).
Dam: Nictitana (311 B.) by Nicotine (69 A.A.).

Nictitana's butter fat records for 6 successive lactation periods are as follow:—1918, 450 lb.; 1919, 396 lb.; 1920, 393 lb.; 1921, 465 lb.; 1922, 524 lb.; 1923, 536 lb.

Inspection of the Herd is Invited.

Visitors will be met at the Station on notifying the Manager, State Research Farm, Werribee.

Application for purchase to

Dr. S. S. CAMERON, DIRECTOR OF AGRICULTURE, MELBOURNE.

AFTER THE HARVEST!

When you have finished harvesting, what about that holiday you have long promised yourself.

Why not go to

MT. BUFFALO

An ideal place to rest, and a complete change of scenery and environment to what you have experienced all the year.

Many country people who saw the Buffalo Model at the Royal Show were amazed. They said they had no idea Victoria had such a beautiful place within its borders.

In Season at all Seasons

Summer time at Buffalo, with its profusion of wildflowers, is a delightful period. Days which are ideal for walking to the many beauty spots, nights which are cool and refreshing. Boating, tennis, mountaineering, trout fishing, and with all this, the comfort and A1. service at the beautifully appointed

GOVERNMENT CHALET.

You may not be able to spare time or money to go to resorts far afield, but Buffalo is within your reach. It is well worth a visit.

Call upon or write to the — *Ask those who have been.*

GOVERNMENT TOURIST BUREAU,
Queen's Walk, Opposite Town Hall, Melbourne

Experts will give you complete information.

The RAILWAY is the BEST WAY